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TESTIMONY

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Chairman Murphy, Vice-Chairman Visclosky, and distinguished members of the caucus: Thank you for inviting me to testify today on the importance of steel to our nation's infrastructure and military. With a new Administration in place, Congress will have a wide range of investment and regulatory initiatives to consider. These actions could significantly impact the health and output of the U.S. steel industry, which I believe is an essential contributor to U.S. national security.

Military and homeland security programs such as armored vehicles, aircraft, and ships represent only about three percent of U.S. steel demand.[1] These capital investments, however, are built with American-made specialty steels not generally used in construction, appliances, or automobiles. For example, ship hulls require military-standard high tensile strength carbon steel, armor plates are made with very hard high-carbon steel laminates, and aircraft use exotic steel alloys with high strength and low weight. Providing the wide range of steels needed by defense manufacturers requires a healthy and diverse American steel industry.

Shipbuilding for the U.S. Navy and Coast Guard is the largest single use of American steel for military and homeland defense, with steel making up about half of a warship's weight. A 100,000-ton aircraft carrier, for example, requires about 48,000 tons of steel,[2] and the fleet overall contains about six million tons of American-made steel.

The military shipbuilding industry exemplifies the need for a robust steel industry. Ships use hardened steel for armor, specialized alloys for sensor and weapons housings, and high-carbon forged steel for machinery components that all require different production

[1] American Iron and Steel Institute, "Profile of the American Iron and Steel Institute, 2016," available at https://www.steel.org/~/media/Files/AISI/Reports/2016-AISI-Profile.pdf.
[2] Philip Siekman, "Build to Order: One Aircraft Carrier," *Fortune*, July 22, 2002, available at http://archive.fortune.com/magazines/fortune/fortune_archive/2002/07/22/326287/index.htm.

processes. Hull plates and frames are made from large pieces of flat or rolled high tensile strength steel that can only be produced by integrated steel mills, as opposed to the electric arc mini-mills that are the fastest-growing component of today's American steel industry. Mini-mills, in turn, are needed to manufacture stainless steel for galleys, flat steel for machinery housings, and rolled steel frames to support bulkheads and equipment.

The future fleet

The U.S. Navy needs a increase in shipbuilding. Today's fleet of 275 ships is, according to the Vice Chief of Naval Operations and other naval leaders, overworked and under-maintained.[3] This is partly due to inadequate readiness funding, but is fundamentally the result of the fleet being too small. The Navy has maintained about 100 ships deployed overseas for the last 20 years, even though the fleet shrank by 20 percent in that time. To continue meeting the demand for naval forces, the Navy forward-based more ships, and deployed those based in the continental United States more frequently and for longer periods. In the clearest manifestation of this trend, in 1997 only 4 percent of Navy deployments were longer than six months. Today every Navy deployment exceeds six months.[4]

This stress on the fleet comes at a very challenging time. Terrorist threats such as the Islamic State remain to be a concern and attacks on Western targets continue. Russia and China are increasing their military capabilities to the point where they can act on longstanding objectives in their regions, as evidenced by Russia's invasion of Ukraine and annexation of Crimea and China's militarization of islands in the South China Sea. In recognition of these trends and today's readiness challenges, Congress directed the Navy in the FY16 National Defense Authorization Act (NDAA) to complete three studies of alternative fleet architectures for the 2030 timeframe. These studies were conducted by the Navy, the Mitre Corporation, and CSBA.

Each fleet architecture study determined that the Navy's current requirement of 308 ships is too small to address the likely demands of the future, although the mix of ships in today's fleet will remain appropriate into the 2030s. CSBA's own study determined the Navy needed a fleet of 382 ships, of which 42 would be small surface combatants not currently in today's fleet. It would also include 12 aircraft carriers (CVN), 71 destroyers (DDG), 71 frigates (FFG), 66 nuclear attack submarines (SSN), 12 nuclear ballistic missile submarines (SSBN), and 39 amphibious warships.[5]

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[3] Sam LaGrone, "VCNO Moran: Navy is Less Ready Because 'We're Too Small'," *USNI News*, February 8, 2017, available at https://news.usni.org/2017/02/08/vcno-moran-navy-is-less-ready-because-were-too-small.

[4] Bryan Clark and Jesse Sloman, *Deploying Beyond their Means: America's Navy and Marine Corps at a Tipping Point* (Washington, DC: Center for Strategic and Budgetary Assessments, 2015), p. 6, available at http://csbaonline.org/research/publications/deploying-beyond-their-means-americas-navy-and-marine-corps-at-a-tipping-po.

[5] The CSBA fleet is described in more detail in Bryan Clark et al., Restoring American Seapower: A New Fleet Architecture for the United States Navy (Washington, DC: Center for Strategic and Budgetary Assessments, 2016), available at http://csbaonline.org/research/publications/restoring-american-seapower-a-new-fleet-architecture-for-the-united-states-.

Informed by the fleet architecture studies, the Navy established a new force structure requirement of 355 ships in late 2016, including 12 CVNs, 104 DDGs, 52 littoral combat ships (LCS) and fast frigates (FF), 66 SSNs, 12 SSBNs, and 38 amphibious ships.[6] Further, the Administration has stated an objective to build a fleet of about 350 ships; the composition of the Administration's objective is not yet fully defined, but will likely be similar to the Navy's new requirement.

Building the future fleet

Our research indicates the Navy will require 15 to 20 years to reach its fleet size requirements for SSNs and CVNs, given the constraints of today's shipbuilding industrial base. Other classes of ships, such as DDGs, amphibious ships, and small surface combatants such as LCSs and FFGs could reach their objectives by the mid-2020s. Although it will take time to field a larger fleet, most classes of ship in production today can be built faster starting in FY17 or FY18. Increasing the rate of production can create significant efficiencies compared to today's shipbuilding plan and leverage tools, such as multi-year procurement contracts, that buy multiple ships over several years under a single contract.

Multi-year procurement enables shipbuilders to contract in advance for the equipment and materials needed to build several ships, creating a predictable demand that steel manufacturers could use for their planning and to establish a sustained production rate. Multi-year procurement also enables shipbuilders to invest in needed facilities and—most importantly—hire workers in anticipation of future demand. Because equipment and materials can be bought in more economic quantities and shipyards can establish production improvements, ships bought under a multi-year procurement contracts usually cost about 10 percent less than ships purchased individually.

The Navy currently builds two SSNs per year under an existing multi-year procurement contract, and in 2021 it will begin also building SSBNs at a rate of about one per year, with some gaps designed to allow for lessons learned in production to be integrated into the construction process. America's submarine shipyards at Huntington Ingalls Industries Newport News Shipbuilding and General Dynamics Electric Boat may be able to build an third SSN in those gap years when they are not starting a new SSBN. When SSBN production is complete in the 2030s, the Navy could build three SSNs every year and reach its requirement of 66 SSNs in the mid 2040s.

CVNs are currently constructed at a rate of one every 5 years, which introduces significant inefficiency into the construction process. Construction of the ship's hull and major modules takes the first 2 to 3 years, leaving welders and shipwrights idle for 2 years until the next ship starts, or requiring that they be retrained and used in other shipyard jobs. When they return to begin construction on the next CVN, they need time to regain the proficiency they once had.

[6] U.S. Navy, "Secretary of the Navy Announces Need for 355-ship Navy," *Navy News Service*, December 16, 2016, available at http://www.navy.mil/submit/display.asp?story_id=98160.

The Navy could increase the rate of CVN production to one every 3.5 to 4 years and procure two CVNs at a time under a multi-year procurement contract. This would improve efficiency by reducing or eliminating the gaps between ships and enable economic ordering of equipment and materials for each ship. The Navy could save more than $1 billion from these measures and reach their objective of 12 CVNs by the 2030s.

Amphibious assault ships (LHA/LHD), built today at Huntington Ingalls Industries Pascagoula, experience similar production inefficiencies. Currently they are procured at a rate of one every 4 to 5 years, but could be accelerated to one every 3 years. The Navy could also build an additional LPD-17 amphibious landing dock in FY17 and begin building the new L(X)R amphibious ship one year earlier in FY19 rather than FY20. The Navy could achieve additional savings if it procured its planned 13 L(X)Rs under a multi-year procurement contract. Together, these changes would enable the fleet to reach the Navy's objective of 38 amphibious ships by the mid 2020s.

The Navy's construction of large surface combatants (DDG) and small surface combatants (LCS, and later FF) could be increased at the shipyards where they are currently under production, enabling them to reach their objective number of 104 and 52, respectively, by the mid 2020s. The Navy currently builds two DDGs per year under multi-year procurement contracts at General Dynamics Bath Iron Works and Huntington Ingalls Industries Shipbuilding Pascagoula; this could be increased to three per year with the additional ship alternating between shipyards.

The Navy, however, builds LCSs at Marinette Shipbuilding in Wisconsin and Austal USA in Alabama under a "block buy" agreement rather than a multi-year procurement contract. This arrangement requires the shipyards to commit to a price per ship for a group of ships, but does not commit the government to purchase all the ships and does not provide the shipyards funding to begin procurement of materials and equipment for the entire group of ships.

The block buy approach places shipyards in the position of guessing the future cost of ships before they know the future cost of components and materials needed to build them. It also prevents suppliers, such as steel manufacturers, from being able to plan for future demands. In FY19, when the Navy begins to move from today's LCSs to its planned FF variant of LCS, it should establish multi-year procurement contracts to increase production efficiencies and improve the ability of suppliers to plan.

Often left out of shipbuilding discussions is the importance of Coast Guard vessels to maritime security and the shipbuilding industrial base. The Coast Guard is in the middle of a major fleet recapitalization. It is completing construction of National Security Cutters (NSC), is a third of the way through replacing its fast response cutters (FRC); and is beginning replacement of its offshore patrol cutters (OPC). In its recent budget blueprint, the Administration implied it would stop construction of the ninth NSC, which Congress authorized in FY15. The Department of Homeland Security appears now to have reversed course and says it plans to keep the originally-planned Coast Guard funding levels. Congress should ensure Coast Guard funding is sustained to build the ninth NSC and support the smaller shipyards that depend on FRC and OPC construction.

Conclusion

American-made steel is obviously important to U.S. national security, but the military is a small customer for U.S. steel producers. To enable steel manufacturers to support future demands for the specialized steels needed in warships, armored vehicles, or aircraft, the government needs to commit to sustained construction rates for these platforms. Only by contracting for multiple years of production can the government enable prime contractors to order materials like steel in advance. This, in turn, allows steel manufacturers to plan, efficiently establish required production rates, and hire needed workers.

Shipbuilding, as the largest military user of American steel, is an area where tools such as multi-year procurement will be essential to create a predictable demand for steel and grow the fleet at lower cost. The U.S. Congress should support the use of multi-year procurement and allow the Navy to incrementally fund these contracts over several years to reduce spending spikes that would otherwise limit shipbuilding. If budget constraints prevent the fleet from growing, the United States will need to scale back the demands placed on the Navy and accept a reduced role for America overseas.