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TESTIMONY

STATEMENT BEFORE THE SENATE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON SEAPOWER
Options and Considerations for Achieving a 355-ship Navy

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Chairman Wicker, Ranking Member Hirono, and distinguished members of the committee: thank you for inviting me to testify today on options and considerations for achieving a 355-ship Navy. This topic is important and timely. The U.S. Navy is at a crossroads, with each major ship type undergoing a transition over the next several years. After delays in construction and testing, the first *Ford*-class aircraft carrier and *Zumwalt*-class destroyer are finally joining the fleet. Programs for the *Virginia*-class submarine, *Burke*-class destroyer, *San Antonio*-class amphibious transport dock, and Littoral Combat Ship (LCS) are all starting new variants. The *Columbia*-class ballistic missile submarine (SSBN) is in development. And the Navy is fielding a host of new unmanned air, surface, and undersea vehicles and systems.

These changes come as the United States faces security challenges it has not encountered since the end of the Cold War. Great power competitors such as China and Russia improved their military capabilities over the last two decades and now appear willing to challenge the international order. They will likely replace transnational terrorism as the primary concern of U.S. military planners within the next Future Years Defense Program (FYDP). At the same time, regional powers such as Iran and North Korea will likely continue to develop new capabilities, including nuclear weapons, and exploit their advantageous locations to cause outsized effects.

To address the changing strategic environment, the Navy increased its force structure requirement earlier this year to 355 ships from the previous level of 308 ships.[1] Today's fleet of 276 ships, however, falls far short of both metrics. The approximately 80 additional vessels the Navy needs to build are the highly capable warships, described above, that will enter the fleet over the next decade. These ships will be more expensive than their predecessors, and, despite the desire of the administration and some in Congress to increase defense spending, Pentagon budgets remain capped by the 2011 Budget Control Act and 2015 Bipartisan Budget

[1] U.S. Department of the Navy, "Secretary of the Navy Announces Need for 355-ship Navy," *Navy News Service,* December 12, 2016, available at http://www.navy.mil/submit/display.asp?story_id=98160.

Act. The DoD will either need relief from budget caps and more funding to expand the fleet or accept that it will not be able to keep up with its great power competitors.

A larger fleet is needed for the United States to exert influence and project power in regions where U.S. and allied security interests are again being challenged, such as the North Atlantic, the Eastern Mediterranean, the South China Sea, and the Indian Ocean. These areas were relatively peaceful since the end of the Cold War, and the U.S. Navy only maintained a token presence in them. That has changed with the resurgence of Russia and the expansion of China's overseas interests.

The 355-ship fleet is also needed to address the Navy's readiness crisis, in which half the Navy's strike-fighters are unable to fly and the fleet's surge capacity is only a third of what it was before the BCA.[2] Ships and aircraft are breaking down because they don't have enough time, or predictable times, for maintenance in port. Since 2000, the fleet shrank by 20 percent, but the number of ships deployed overseas remained about the same at about 100. The Navy has kept up with demand by basing more ships overseas and deploying ships more frequently and for longer from the continental United States (CONUS). For example, in 2000, less than 10 percent of deployments were more than six months; today they all are.[3]

And finally, the Navy and Marine Corps need a larger fleet to implement their new concepts for distributed operations, electromagnetic warfare, expeditionary advance basing, and littoral operations in a contested environment. These new ways of fighting will be essential to deterring competitors like Russia and China, who rely on their ability to contest the air and waters in their near abroad, to coerce their neighbors, and to slow or stop U.S. intervention.

A larger Navy, however, is not enough. The 355-ship fleet will need to be equipped with new weapons, sensors, and unmanned systems to implement new Navy and Marine Corps operational concepts. Without the reach and lethality of new payloads, a larger fleet would not be able to survive and fight in contested areas long enough to defeat or delay enemy aggression against U.S. allies. Most importantly, autonomous and unmanned vehicles offer the ability to disaggregate sensors, weapons, and operators to improve the ability of U.S. naval forces to find and attack the enemy first and avoid enemy counterattacks. They will be an increasingly important component of the future fleet.

Fleet Architecture and the Surface Combatant Mix

To address the increasing demand for naval forces and intensifying competition with China and Russia, the Congress directed in the 2016 NDAA that the Navy conduct three studies to assess its required fleet architecture in the 2030 timeframe. CSBA conducted one of those studies and determined that the Navy needed about 340 battle force ships to support U.S.

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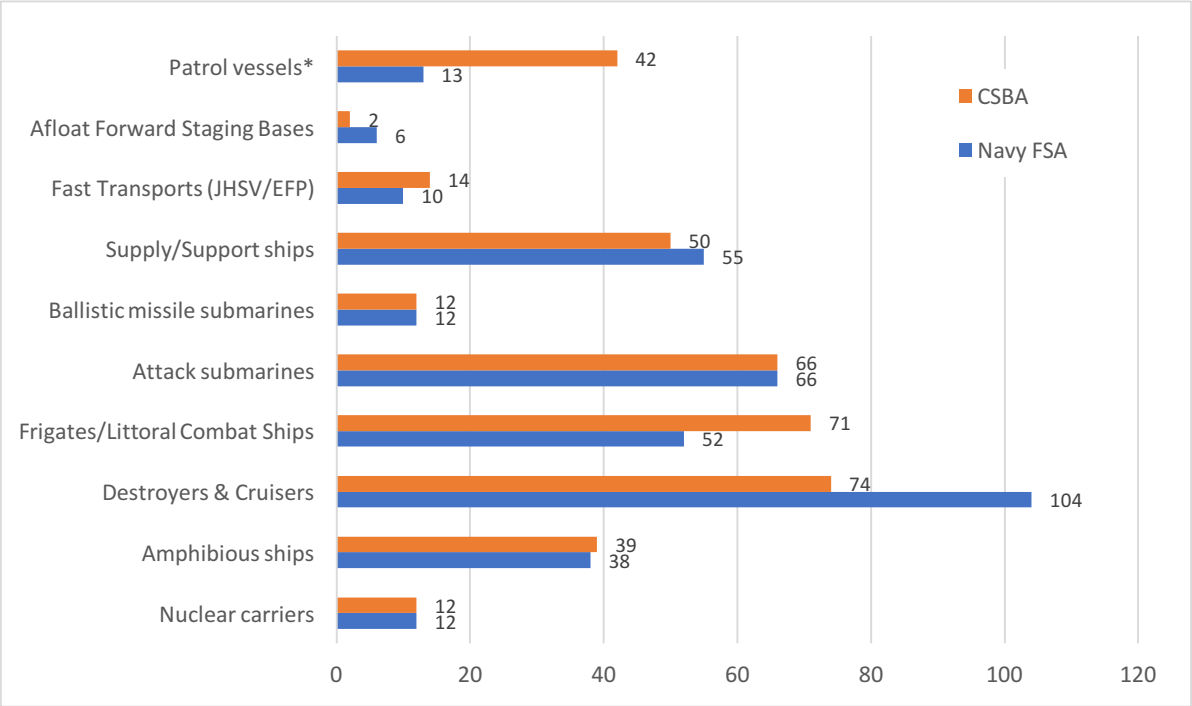
2 Sydney J. Freedberg Jr., "Fix Readiness First, Shipbuilding Second: Navy to Trump," *Breaking Defense*, January 11, 2017, available at http://breakingdefense.com/2017/01/fix-readiness-first-shipbuilding-second-navy-to-trump/.

3 Data from CSBA's analysis of fleet deployment was obtained through a Freedom of Information Act request from the Navy Times and, additionally, from Daniel Whiteneck, Michael Price, Neil Jenkins, and Peter Schwartz, *The Navy at a Tipping Point: Maritime Dominance at Stake?* (Alexandria, VA: Center for Naval Analysis, 2010). See also, Congressional Budget Office (CBO), *Preserving the Navy's Forward Presence with a Smaller Fleet* (Washington, DC: CBO, March 2015), p. 9.

security interests in the 2030s. We also assessed the Navy needed about 42 smaller patrol vessels that would not fall under current Navy ship counting rules.[4]

Although it was developed using a different approach than the Navy's force structure assessment (FSA), the CSBA fleet architecture, shown in Figure 1 below, is very close to the Navy's requirement.

FIGURE 1: THE NAVY'S FORCE STRUCTURE REQUIREMENT COMPARED TO THE PROPOSED CSBA FLEET ARCHITECTURE



The main difference between the two fleets is the rebalancing of surface combatants in the CSBA fleet toward a nearly equal mix of large surface combatants (guided missile cruisers (CG) and destroyers (DDG)) and small surface combatants, (guided missile frigates (FFG), LCS, Patrol Coastal (PC) ships, and mine countermeasure ships (MCM)). This difference results largely from the CSBA fleet's use of FFGs for some anti-submarine warfare (ASW), surface warfare (SUW), and air and missile defense (AMD) missions that the Navy assigns to large surface combatants.

The Navy is currently evaluating the requirements for a FFG that will succeed the LCS as its primary small surface combatant. The request for information (RFI) recently issued by the Navy for industry input sets a low bar for the minimum capabilities needed in the new ship.[5]

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4 Bryan Clark, Peter Haynes, Bryan McGrath, Craig Hooper, Jesse Sloman, and Tim Walton, *Restoring American Seapower: A New Fleet Architecture for the United States Navy* (Washington, DC: Center for Strategic and Budgetary Assessments, 2017), p. 110; Secretary of the Navy, *General Guidance for The Classification of Naval Vessels and Battle Force Ship Counting Procedures*, SECNAVINST 5030.8C (Washington, DC: Department of the Navy, June 14, 2016), p. 2.

5 Department of the Navy, "RFI: FFG(X)—US Navy Guided Missile Frigate Replacement Program," *FedBizOps*, July 10, 2017, available at

Although the RFI allows for a wide range of possible FFG proposals, it establishes a capability hierarchy that could support development of a less expensive and less capable ship that does not meet the Navy's needs.

The FFG RFI designates capabilities for SUW and self-defense as the highest priorities and ASW systems as a secondary priority. Capabilities for AMD, such as a vertical launch system (VLS), are not a priority. However, respondents to the RFI are asked to address whether a VLS magazine could be included in the FFG, and of what size. This approach leaves open the question of whether the FFG will be able to host VLS-launched weapons such as the SM-2 and SM-6 multi-mission interceptors or Tomahawk land attack missiles (TLAM).

The future FFG, however, will need capabilities to conduct ASW and AMD. The Navy's stated requirement of 104 large surface combatants is based on requirements for carrier strike group (CSG) protection and ballistic missile defense (BMD) stations.[6] This leaves no CGs or DDGs for other operations such as escorting logistics or noncombatant ships. Moreover, the Navy's shipbuilding plan, shown in Figure 2 below, will fall short of the required number of large surface combatants.[7] Small combatants such as FFGs will need to support escort missions for logistics and noncombatant ships, or even of CSGs in some situations. To be effective escorts, they will need to protect against submarine, ship, and air attack.

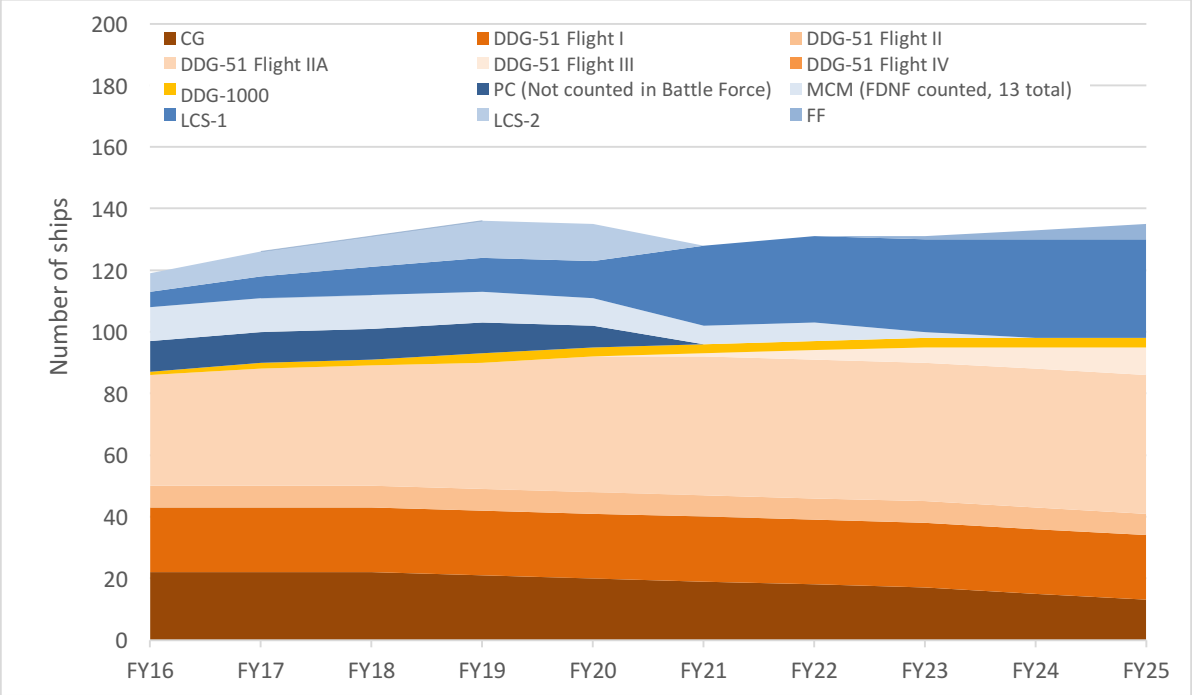
The Navy's shortfall in small surface combatants is also concerning. As Figure 2 shows, the Navy only has about half the 52 small surface combatants it says are required. As a result, CGs and DDGs are often used for lower-end missions such as maritime security and training exercises. This will improve as more LCS enter the fleet, but they will not be able to conduct AMD to protect noncombatant ships.

https://www.fbo.gov/index?s=opportunity&mode=form&id=cdf24447b8015337e910d330a87518c6&tab=core&_cview=0.

6 Sixty large surface combatants are needed to protect the Navy's required twelve CSGs based on five large surface combatants per CSG as recommended in U.S. Department of the Navy, "Policy For Baseline Composition and Basic Mission Capabilities of Major Afloat Navy and Naval Groups," OPNAV Instruction 3501.316B, October 21, 2010, available at https://doni.daps.dla.mil/Directives/03000%20Naval%20Operations%20and%20Readiness/03-500%20Training%20and%20Readiness%20Services/3501.316B.pdf. Assuming the Optimized Fleet Response Plan (OFRP) of one 7-month deployment per 36-month cycle, five large surface combatants are needed for each CG or DDG on a BMD station. The Navy maintains 10–15 BMD stations at any given time in the Mediterranean, Persian Gulf, and Western Pacific supported by a combination of forward-based and CONUS-based ships. With two forward-based ships or five CONUS-based ships needed to support each station, between 40 and 75 large surface combatants could be required for BMD operations.

7 Chief of Naval Operations (CNO), *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2017* (Washington, DC: Department of the Navy, July 2016), p. 7.

FIGURE 2: THE NAVY'S PLANNED INVENTORY OF SURFACE COMBATANTS



Building the 355-ship Fleet

Achieving the larger, more capable fleet the Navy needs will cost more money. We estimate the CSBA fleet architecture of about 340 ships would cost about 15–20 percent more to build, operate, man, and sustain than the Navy's current plans, which are still based on the 308-ship requirement. The Congressional Budget Office (CBO) estimates the Navy's planned 355-ship fleet would cost about 25 percent more to build and 16 percent more to operate and support than its current 308-ship plan.[8]

The CSBA fleet architecture and Navy force structure requirement grow today's 276-ship fleet by increasing the number of ships already under construction or planned to start in the next few years. The shipbuilding industrial base could reach the objective number for each ship type in the 355-ship fleet by the late 2030s, but additional investment will likely be needed in shipyards and their suppliers to support increased production. The Navy recently announced that, with appropriate funding, the shipbuilding industrial base could begin construction of up to 29 additional ships over the next seven years.[9]

The fleet's expansion will need to consist of highly-capable warships equipped with improving weapons, sensors, and unmanned systems. These ships, such as those in production or starting during the next several years, are required for concepts that could allow naval forces to defend themselves and fight in highly contested environments like the East and South China Seas or Norwegian and Baltic Seas. Operating in these forward areas

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8 CBO estimates the 355-ship fleet would cost on average $26.6 billion per year to build. See Eric Labs, *Costs of Building a 355-Ship Navy* (Washington, DC: CBO, April 2017), p. 2. CSBA estimated its 340-ship fleet would cost an average of $23.3 billion per year to build.

9 Sean Stackley, *U.S. Navy Accelerated Fleet Plan* (Washington, DC: U.S. Department of the Navy, February 9, 2017), available at https://www.blumenthal.senate.gov/imo/media/doc/U.S.%20Navy%20Accelerated%20Fleet%20Plan.pdf.

will be essential for naval forces to provide conventional deterrence and support military competition with other great powers.

Several analysts have proposed alternative approaches to increase the size of the fleet other than stepped-up production of current and planned ships. Although some elements of these proposals have merit, they result in a less-capable fleet that will not be effective in great power competitions.

"Big-Small" instead of "Hi-Low"

Some analysts have proposed the Navy pursue a "Hi-Low" mix to grow the fleet. In this approach, the Navy would build more ships with lower survivability, fewer missions, and less-capable sensors, combat systems, and electronic countermeasures. LCS was an example of this approach. These low-end ships would conduct less stressing missions such as training, maritime security, and humanitarian assistance, freeing up high-end nuclear aircraft carriers (CVN), amphibious ships, SSNs, and large surface combatants for deterrence missions.

The Hi-Low concept worked during and immediately following the Cold War when only a few large national militaries fielded sophisticated anti-ship weapons. Today, insurgent and terrorist groups around the world are armed with anti-ship cruise missiles (ASCM) and air defenses, which they have used against U.S. and partner forces.[10] Low-end ships would be at risk from surprise attack wherever they go.

Moreover, the Navy needs every ship to be able to defend itself and support offensive operations in contested environments. After the Cold War, the potential for an eventual U.S. response was enough to dissuade regional powers like Russia, China, or Iran from aggression against U.S. allies. Each of those competitors now fields long-range sensor and weapon networks that can attack their neighbors hundreds of miles away and protect their ground forces mounting an incursion or invasion. The same long-range sensors and weapons can threaten U.S. forces attempting to intervene on behalf of an ally under attack.[11] To persist in these environments and deter aggression, the U.S. fleet needs to be able to defeat sophisticated anti-ship cruise and ballistic missiles or the sensors supporting them. Low-end ships could become liabilities in such a scenario.

But every ship cannot be a dreadnought. To be affordable, the fleet will need to include some less-expensive ships The Navy also needs small surface combatants to enable proportional responses to low-intensity gray-zone aggression by Chinese civilian and paramilitary forces in places like the South China Sea. For example, deploying a CSG or amphibious ready group (ARG) to support Japanese or Philippine efforts to resist illegal fishing or island-building

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[10] Sam LaGrone, "CNO Richardson: USS Mason 'Appears to Have Come Under Attack'," *USNI News*, October 16, 2016, available at https://news.usni.org/2016/10/15/cno-richardson-uss-mason-attacked-cruise-missiles-off-yemen.

[11] See Office of Naval Intelligence (ONI), *The PLA Navy: New Capabilities and Missions for the 21st Century* (Washington, DC: ONI, April 9, 2015), pp. 13–25, available at http://www.oni.navy.mil/Portals/12/Intel%20agencies/China_Media/2015_PLA_NAVY_PUB_Print.pdf?ver=2015-12-02-081247-687; and Office of the Secretary of Defense (OSD), *Military and Security Developments Involving the People's Republic of China 2016*, Annual Report to Congress (Washington, DC: DoD, 2016), pp. 22–29, available at http://www.defense.gov/Portals/1/Documents/pubs/2016%20China%20Military%20Power%20Report.pdf. See also ONI, *Iran's Naval Forces* (Washington, DC: ONI, March 1, 2017).

would far exceed what is needed and could cause a backlash among U.S. allies who perceive the move as too escalatory.

Instead of a Hi-Low mix in the future fleet, the Navy needs a Big-Small mix. Each ship needs to be able to defend itself long enough to expend its offensive weapons against the enemy. This requires AMD systems, strike and anti-ship weapons, and capable sensors. Small, less expensive ships such as FFGs or patrol vessels could be equipped with these capabilities, but would have less capacity than larger combatants like DDGs.

Manned, not unmanned

Another option to grow the fleet is to increase its number of unmanned vehicles and systems. In theory, unmanned systems could extend the reach and capacity of individual manned platforms, enabling a smaller number of manned ships to cover the same area as a larger fleet. For example, unmanned undersea vehicles (UUV) could conduct intelligence-gathering operations to reduce the demand on manned submarines; unmanned surface vehicles (USV) could provide additional magazine capacity to surface combatants to keep them on the battle line longer; and unmanned air vehicles like the MQ-4C *Triton* could conduct surveillance that today is done by manned P-8 *Poseidon* aircraft.

Unmanned systems should be part of the future Navy and an increasing portion of the fleet. The CSBA fleet architecture, for example, identified the need for 40 extra-large UUVs and USVs, hundreds of smaller unmanned vehicles, and thousands of unmanned acoustic or electronic sensors. These unmanned systems will be needed to enable new operational concepts to deter and defeat aggression. In concert with manned platforms, unmanned vehicles could provide additional sensor and weapons reach and capacity that enable U.S. forces to attack the enemy more effectively first and last longer in the fight.

Except for surveillance and reconnaissance missions, however, unmanned vehicles are unlikely to completely replace manned platforms in naval operations during the near to mid-term. The importance of deterrence and crisis response in naval missions requires that naval forces be deployed forward in areas of potential confrontation and conflict where they can intervene against aggression. This will place them in proximity to potential adversary forces as well as civilian vessels conducting lawful activities like fishing, shipping, or research. Although technically possible, in peacetime unmanned vehicles and systems would likely not be allowed to defend themselves from tampering or attack. Regardless of the sophistication in a vehicle's autonomy, its sensors will be constrained by cost or the space, weight, and power available. The vehicle could easily misinterpret curiosity or inadvertent contact as an attack and respond with force against unarmed civilians.

Another challenge involved in replacing combatant ships with armed unmanned vehicles is positive control over weapons. Long-range satellite communications are likely to be jammed or degraded during heightened tensions or conflict in contested areas where naval forces need to operate to deter or respond to aggression. This could restrict communication with unmanned vehicles to line-of-sight datalinks that are harder to detect and jam, but will limit how far from a manned platform an autonomous vehicle could conduct weapons operations. The future fleet is more likely to include manned-unmanned teams than unmanned autonomous formations.

Life extension, not reactivation

Bringing the "Ghost Fleet" out of retirement sounds like quick, cheap way to expand the fleet. In part, that is why it exists. In practice, however, reactivating retired warships will take time,

money, and manpower from the current fleet without providing significant warfighting capability. This may be an appropriate approach during a wartime mobilization, but is not appropriate in peacetime.

Reactivated ships will require tens of millions of dollars in maintenance to be made operational and sea-worthy. They will also require millions of dollars' worth of combat system upgrades. As mentioned above, naval forces will need to survive and fight in highly contested environments to deter or respond to aggression by great powers Russia and China or regional powers like Iran. Without new capabilities, reactivated ships like the first five *Ticonderoga*-class CGs or *Perry*-class FFGs will not have the self-defense capability to persist in areas like the South or East China Seas at acceptable risk during periods of heightened tensions or conflict. And as demonstrated by ASCM attacks by Houthi rebels against the USS *Mason* and a United Arab Emirates High Speed Vessel, areas outside the most contested regions are not hazard-free.[12]

Even with more funding, reactivation will take years. Each ship would need to be inspected and work packages developed to bring them back to operating condition and upgrade them with appropriate defensive and offensive capabilities. The ships would then need to be worked into the schedules of civilian shipyards that maintain the rest of the surface fleet. To allow current operational plans to continue, reactivated ships will need to wait for gaps when shipyards are available.

And finally, newly-reactivated ships will need crews. Compared to the approximately 100 sailors that operate an LCS, an FFG or CG will require 150–200 sailors. The ex-USS *Kitty Hawk* aircraft carrier would require about 2,500 sailors. The Navy already has manpower shortfalls, particularly in the surface fleet. Adding new ships without more sailors will further stress the already strained personnel system.[13] Moreover, some retired ships, such as *Kitty Hawk*, have obsolete conventional steam propulsion plants no longer used in the U.S. Navy. The Navy would need to reestablish specialists to operate and maintain these systems.

Instead of bringing old ships out of mothballs, the Navy should consider keeping some ships in operation beyond their planned retirement dates. These ships are in better, or at least better-known, condition than their retired counterparts and have received combat systems upgrades. They also have trained and experienced crews.

For example, the Navy is conducting a phased modernization of the oldest 11 CGs, which will keep them viable into the 2030s. These modernizations should focus on hull, mechanical, and electrical (HM&E) upgrades and equipping the CGs with datalinks, passive sensors, and electromagnetic warfare countermeasures, rather than upgrading their radars or giving them BMD capability. This will enable them to better defend themselves, reduce their risk of counterdetection, and employ their large VLS capacity to support attacks with other networked surface combatants.

The Navy could take a similar approach with some of its 11 amphibious landing docks (LSD), which will be replaced with new LX(R) amphibious ships starting in the 2020s. The Navy

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[12] Tom Finn and Hadeel Al Sayegh, "UAE says Houthi attack on ship in shipping lane was 'act of terrorism'," *Reuters*, October 4, 2016, available at http://www.reuters.com/article/us-emirates-security-idUSKCN1242DB.

[13] Mark D. Faram, "Sea duty shortages: Why the Navy is offering rare extensions for thousands of first-term sailors," *Navy Times*, February 5, 2017, available at https://www.navytimes.com/articles/sea-duty-extensions-for-first-time-sailors.

could conduct a life-extending modernization period on some LSDs instead of retiring them so they could be used for lower-end training, maritime security, and humanitarian assistance missions. They could then help address the gap in small surface combatants shown in Figure 2.

Submarines are a key Navy shortfall. Today the fleet has about 52 SSNs, compared to a requirement of 66. The inventory will decrease over the next decade as *Los Angeles*-class SSNs retire. In some years of the Reagan-era naval buildup, SSNs were built at rates of up to four per year, whereas now two new *Virginia*-class SSNs are built each year. The Navy is addressing the SSN shortfall in part by extending the lives of some SSNs with remaining nuclear fuel. These efforts should continue and expand as appropriate.[14]

Conclusion

Today's Navy emphasizes efficiency over effectiveness. This was a rational reaction to the presumed end of great power competition with the fall of the Soviet Union. In the decades that followed, the U.S. Navy developed a process to affordably maintain a continuous presence of deployed forces that could not stop aggression by regional powers. They could, however, support an eventual response by follow-on forces as was done in Kosovo, Iraq, and Libya.

This approach to conventional deterrence will not likely work against great power competitors, who will have much greater military capabilities than past regional adversaries and probably seek a quick, decisive victory over their adversaries. Efforts to reverse the results of aggression after the fact would require a much larger conflict and likely have global consequences that would create international pressure to reach a quick settlement.

To be deterred, aggressors must be presented with the possibility that their goals will be denied or that the immediate costs to pursue them will be prohibitively high. This will require capable ships equipped with higher capacity defenses, more effective offensive weapons, and improved capabilities to fight in the electromagnetic spectrum. It will also require a larger fleet, as regions such as Northern Europe, the Eastern Mediterranean, and the Indian Ocean become hot spots for great power competition and confrontation.

The Navy's 355-ship requirement and CSBA's proposed fleet architecture emphasize effectiveness over efficiency. Built on new operating concepts the Navy is already pursuing, a larger more capable fleet offers the prospect of protecting and sustaining America's security and prosperity, as well as that of our friends and allies around the world, in the decades ahead. Deterring great power war demands the readiness to contest and win it—and a fleet that supports this approach.

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[14] Megan Eckstein, "Navy Finds Urgency In Staving Off A Sub Shortfall Decades In The Making," *USNI News*, available at https://news.usni.org/2016/03/08/navy-finds-urgency-in-staving-off-a-sub-shortfall-decades-in-the-making; The Navy also plans to build an additional SSN during some years of the coming decade. See Megan Eckstein, "Navy Adds Second Attack Sub to 2021 Plans; Considering 3 SSNs in Future Years," *USNI News*, May 24, 2017, available at https://news.usni.org/2017/05/24/navy-adds-second-attack-sub-to-2021-plans-considering-3-ssns-in-future-years.