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ISSUES AFFECTING NAVAL FORCE STRUCTURE

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BEFORE THE

SEAPOWER AND EXPEDITIONARY FORCES SUBCOMMITTEE

OF THE

COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES

ONE HUNDRED ELEVENTH CONGRESS

SECOND SESSION

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ISSUES AFFECTING NAVAL FORCE STRUCTURE

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
SEAPOWER AND EXPEDITIONARY FORCES SUBCOMMITTEE,
Washington, DC, Wednesday, January 20, 2010.

The subcommittee met, pursuant to call, at 3:05 p.m., in room HVC–210, Capitol Visitor Center, Hon. Gene Taylor (chairman of the subcommittee) presiding.

OPENING STATEMENT OF HON. GENE TAYLOR, A REPRESENTATIVE FROM MISSISSIPPI, CHAIRMAN, SEAPOWER AND EXPEDITIONARY FORCES SUBCOMMITTEE

Mr. TAYLOR. Good afternoon and welcome to the first of many hearings which this subcommittee will undertake on issues affecting the United States Navy and Marine Corps. Today's hearing is in advance of a budget submission which is due to arrive to Congress on the first of February. This is the reason that we are meeting prior to that day.

I do not intend for this subcommittee to be a rubber stamp to the Department's request, no matter which political party occupies the White House. As long as I have the great privilege to serve as the chairman of this subcommittee, it is my intention to ensure that the American people have the right to witness the issues debated in open session and work with all members of this subcommittee to recommend an authorization that ensures our Navy and Marine Corps have the ships, aircraft and other equipment that they need to do the job that our Nation asks them to do.

Today is just the first day of a process of arriving at those recommendations. I felt that it is important to start the legislative session with an examination of alternatives to restore our Navy's fleet to the numbers necessary to meet our national security needs. To that end, I have requested our witnesses discuss a wide range of issues affecting the Navy force structure particularly in light of the President's decision in October that the Navy play a much larger role in theater missile defense.

I want to state for the record I support the decision to put our Nation's theater missile defense on ships. Having had the good fortune to serve here for 20 years, I have witnessed, sometimes in horror, as our Nation has been asked by a number of allies to leave, the billions of dollars of infrastructure we left behind in Panama, the billions of dollars of infrastructure we left behind in the Philippines. When the Puerto Rican people asked us to quit using the island of Vieques as a practice range, the Navy made the decision to shut down Roosevelt Roads. And as we speak, we are in the process of leaving Okinawa. In every instance we are basically one

election cycle away from a key ally asking us to leave billions of dollars' worth of things behind. And if we were to put the national missile defense in Eastern Europe, the same thing could happen there.

If we put it on a ship, we are then off the coast of any potential foe. We don't have to ask a host country for permission to use our national missile defense; but most of all, that we are able to move that position around as it is needed around the world, and I think it is the way to go.

What I don't see is the Administration telling us where those ships are going to come from. And I would remind this committee, particularly those of you who have been around for a while, the rule of three that we have all learned; that for every troop we have deployed, we have one in theater, one on the way to the theater, one returning from theater who is training to do his original job. In the case of ships, it is probably going to be a 4-to-1 ratio. So in order to have 24-hour coverage every day of the year off a potential foe, that means we are going to have to have four Navy ships prepared to do that job.

I think it is important that we say this now before the budget submission because, again, I am in support of the President's request to put these things on ships, but I want the President to make the request for those ships. Let us don't pretend it is going to happen later. Let us don't pretend it is going to happen overnight. From the day we order that ship, it is probably at least three years to delivery for the first, so we need to get started now.

I don't think our Navy is large enough to do the job they are asked to do, but numbers alone are not the answer. Which type of ship and what number is more important than just quantity. Certainly I don't think we match up well in either the total number of ships or the types of ships.

There are some would say we don't need our amphibious forces. I would remind you that as we speak, one of those big-deck amphibs is off in Haiti helping those people, and in the case of south Mississippi, one of the big-deck amphibs came to our rescue after Hurricane Katrina. Moving from the sea is the only guaranteed access that we can count on, and I think we need more, not fewer, amphibious assault ships.

There are those who say we don't need 11 aircraft carriers. Again, I disagree. Those battle groups have done more to maintain the peace in the world for the past 60 years than any other force we maintain.

I am convinced that we do not have enough fast-attack submarines. These boats kept the Soviet Navy in check during the entire Cold War, and they will keep any other adversary in check as we proceed into this century.

I am also convinced we don't have enough surface combatants. The evidence is everywhere. We have carriers operating without escort, amphibious assault ships transiting the Strait of Hormuz without any antisubmarine warfare-capable ship in company because the escort is off chasing pirates or guarding oil platforms.

We have a looming need to replace the capability of the *Ohio* class of strategic missile submarines, but doing so may cripple the Navy budget in the later part of the decade.

In addition to the hard facts of types of ships and numbers of ships are also matters that need to be debated. The Congress was perfectly clear in the fiscal year 2008 National Defense Authorization Act that the next generation of cruiser has a nuclear power system for electrical power generation and propulsion. This action was based on a bipartisan support on a clear and present threat that the access to fuel could be restricted and leave the fleet without the ability to conduct major operations.

I would remind the Members that a typical surface combatant uses about 10 million gallons of fuel per ship per year, a large-deck amphib about the same. And I think any clever foe is going to take advantage of our vulnerability to the fleet oilers, that the first ship that they attack is the oiler, and if the oiler doesn't sail, the escorts don't sail. If the escorts don't sail, the carrier doesn't sail.

And I would hope that we have learned the hard way in places like Iraq and Afghanistan that every enemy, no matter how sophisticated or unsophisticated, is smart enough to exploit our weaknesses. This is a weakness that we can and have already directed the Navy to address. And I regret to say that that was two years ago. The Navy has done absolutely nothing in pursuit of the nuclear cruiser to date.

My last major concern is the *Ohio* submarine replacement. I expect to have a stand-alone-only hearing on this issue due to the significant importance to national security. And I want to make sure that we have identified the right ship and the right missile before we make a 40-year commitment to the program.

Again, does it make more sense to build a ship to fit our existing D–6 missiles, or does it make more sense to build a missile that will fit a *Virginia*-class submarine? Since this is something that is going to be a decision that will affect the United States Navy for decades to come, we have to get it right the first time.

These are all hard problems to tackle, and I look forward to open debate with my colleagues in the coming weeks and months. I am always open to suggestions from the members of this subcommittee for hearing topics and look forward to your input.

Today we have three very distinguished experts in Navy acquisition and policy. Dr. Eric Labs is a senior analyst for the Congressional Budget Office. His independent cost analysis of ship construction has proven very helpful to this committee over the years.

Mr. Ronald O'Rourke is the senior research analyst at the Congressional Research Service and routinely provides the Congress with in-depth and well-researched papers on capability, cost and options for future procurement.

Dr. Loren Thompson is the president and chief operating officer of the Lexington Institute. Dr. Thompson has appeared before this committee before, and his insight is always helpful.

For disclosure, the United States Navy was invited to send representatives to testify. Secretary Mabus has agreed to do so with the stipulation that the witnesses would not discuss the upcoming budget submission. Subsequently, my understanding is that Secretary Gates denied the Navy permission to testify. While I think we would have had a better hearing with them, I am satisfied that our panel today will have a frank and open discussion on the best way to rebuild our fleet.

I would like to call on the gentleman from Missouri, my friend and partner on the subcommittee, the Honorable Todd Akin.

[The prepared statement of Mr. Taylor can be found in the Appendix on page 43.]

STATEMENT OF HON. W. TODD AKIN, A REPRESENTATIVE FROM MISSOURI, RANKING MEMBER, SEAPOWER AND EXPEDITIONARY FORCES SUBCOMMITTEE

Mr. AKIN. Thank you, Mr. Chairman, and welcome to our witnesses. We appreciate your willingness to appear before us today. I hope this will be a useful springboard for this subcommittee as we prepare to consider the President's fiscal year 2011 shipbuilding budget request and the results of the Quadrennial Defense Review (QDR).

Today's hearing gives us the opportunity to frame the various issues our subcommittees must consider depending on a number of alternative shipbuilding plans that could emerge shortly. I hope our Members will use this hearing as a foundation for the rigorous oversight and decision-making that will be required in the coming weeks. I imagine that our witnesses have been somewhat challenged in preparing your testimony today, for we will all continue to rely on press accounts and rumor as we wait for the first Monday in February.

In spite of the lack of new information, your preliminary insights are valuable. I, for one, have been troubled by certain reports such as those indicating the Navy may attempt to eliminate as many as two carrier strike groups. Likewise, indications that the Navy may not ramp production of the *Virginia*-class submarine to a sustained rate of two per year starting in fiscal year 2011 raised concerns about our ability to meet combatant commander requirements for submarine presence, and may have second- or third-order effects on the total cost of shipbuilding.

There have also been stories in the media about pressures on amphibious lift. In fact, the Commandant recently alluded to the stress placed on the amphibious fleet in all scenarios evaluated during the QDR. We need to ensure that the Navy and the Marine Corps have both the quality and capability in our battle force ships to maintain our maritime strategy, deter and win any future conflict in which the United States may be involved.

On the other hand, some of these concerns may be premature. There have also been press accounts indicating that the next shipbuilding plan will establish a 324-ship requirement that would maintain the current minimum requirement for 11 carriers, 48 attack submarines, and 33 amphibious ships. Nevertheless, I was interested to note in your prepared testimony several items worth further consideration by this subcommittee.

For example, Mr. O'Rourke, you indicated that should the Navy be forced to pay for the *Ohio*-class replacement program within its current top line, it could result in significant reductions in other shipbuilding programs. This is no great surprise. But you also note that such reductions could result in a substantial consolidation of the surface ship construction industrial base.

Furthermore, Dr. Labs, in your testimony, you point out that sea ballistic missile defense could require substantial commitment of

resources. That could make it difficult for the Navy to fund other ship programs.

Therefore, whether or not the QDR and the upcoming long-term shipbuilding plans substantially alter the requirements for certain key platforms, the Navy and this committee will have a number of difficult choices to make in the near term.

I thank the Chairman for holding this hearing today so early in the year to allow us to properly understand these issues. Thanks again to our witnesses. I look forward to your testimony.

And thank you, Mr. Chairman.

Mr. TAYLOR. Thank you, Mr. Akin.

[The prepared statement of Mr. Akin can be found in the Appendix on page 48.]

Mr. TAYLOR. And the Chair wants to correct himself. It is a D–5 missile, not a D–6.

Other members of the subcommittee are invited to submit a statement for the record if they so choose. Without objection, Members will have five legislative days to submit any written statement.

Gentlemen, it is the norm for this committee for our witnesses to speak for about five minutes. I think given the gravity of the subject matter, and most of all given your expertise, we are going to give you significant leeway on that. We have cast all of our votes for the day, so if you could keep it to about 10 minutes so that Members have an opportunity to ask their questions.

Dr. Labs, if you would, please.

STATEMENT OF DR. ERIC J. LABS, SENIOR ANALYST, CONGRESSIONAL BUDGET OFFICE

Dr. LABS. Thank you. Mr. Chairman, Congressman Akin and members of the subcommittee, I appreciate the opportunity to appear before you today to discuss the challenges that the Navy is facing in its shipbuilding plan.

The subcommittee asked the Congressional Budget Office to examine three matters: the Navy's draft shipbuilding plan for fiscal year 2011, the effect that replacing the *Ohio*-class ballistic missile submarines with a new class of submarines will have on the Navy shipbuilding program, and the number of ships needed to support ballistic missile defense from the sea.

I would therefore like to make the following five points. If the Navy receives the same amount of money for ship construction in the next 30 years that it has over the past three decades, about $15 billion per year, it will not be able to afford its 313-ship fleet.

Two, the Navy's draft 2011 shipbuilding plan as reported in the press increases the Navy's stated requirement for its fleet from 313 ships to 324, but the production schedule in the plan by only 222 ships, or 74 fewer than the Navy's previous plan. Critically, most of the reductions would come from the Navy's combat ships.

Three, Congressional Budget Office (CBO) estimates the plan would cost an average of $20 billion per year. I stress that this is a preliminary estimate only, which we will revise when the Navy formally submits its shipbuilding plan next month.

Four, building a new class of ballistic missile submarines could cost about $85 billion. If the Navy received that amount in addition

to the resources needed to execute the draft 2011 plan, it could probably purchase the 56 additional ships identified in the alternative construction plan that accompanied the draft 2011 plan.

Five, if the Navy needs to dedicate ships to maintain a continuous patrol for ballistic missile defense, then as many as five to six ships per station would be needed. If the Navy employs rotational crewing on Ballistic Missile Defense (BMD) ships or bases them in the European theater, then it could make do with fewer ships.

In a report to this subcommittee in 2008, CBO estimated that carrying out the Navy's 2009 shipbuilding plan to purchase 296 ships over 30 years would cost an average of almost $27 billion a year. Yet senior Navy officials have said in recent months that the service expects to make do with $13- to $15 billion per year.

CBO compared the number of ships that could be purchased with annual budgets of either $13 billion or $15 billion onto three scenarios for average ship costs: $2.1 billion per ship, as in the 2010 defense appropriation; $2.5 billion per ship, which was the Navy's estimate for the costs of ships in its 2009 plan; and $2.7 billion per ship, which was CBO's estimate for ships in the 2009 plan.

At the bottom end of the range, a $13 billion annual budget would buy 144 ships over 30 years, assuming an average cost of $2.7 billion apiece. At the top end of the range, a $15 billion annual budget would yield 214 new ships over 30 years if their cost averaged $2.1 billion each. This range is one-half to three-quarters the number of ship purchases proposed in the 2009 plan.

The subcommittee then asked CBO to analyze the procurement and inventory tables from a draft of the Navy's 2011 shipbuilding plan which was reported in the press. That plan dramatically reduces ship purchases. Most of the cuts under the draft 2011 plan and the alternative construction plan that accompany it come from the Navy's combat ships, which are defined here as surface combatants, submarines, aircraft carriers and amphibious ships. Under the 2009 plan, the Navy would have purchased 245 combat ships. That number falls to 166 combat ships purchased under the draft 2011 plan, and 207 combat ships in the alternative plan. Thus by 2040, the draft 2011 shipbuilding plan could produce fleets of 185 combat ships, which compares with 239 today or 268 under the 2009 shipbuilding plan.

It is not clear from available information what the Navy believes the draft 2011 plan would cost. CBO's preliminary assessment of the draft 2011 plan suggests it would cost an average of about $20 billion a year in 2010 dollars. The alternative 2011 plan, which adds the 56 ships, would cost an average of about $23 billion per year, CBO estimates.

Now, with respect to replacing the Navy's ballistic missile submarines, many Navy and industry officials expect that the new ships would be substantially smaller than the *Ohio* class. However, that does not necessarily mean that they would be cheaper to build even after removing the effects of inflation. Press reports indicate that the Navy expects a class of 12 SSBN(X)s, the designation for the new Boomer, to cost a total of about $80 billion. That total implies an average cost of around $6.7 billion, or one press reported indicated a $6- to $7 billion range.

CBO assumed that the SSBN(X) would carry 16 missile tubes instead of 24 on the existing submarines and would displace around 15,000 tons submerged, making it roughly twice as big as the *Virginia*-class attack submarine, but nearly 4,000 tons smaller than the *Ohio*-class sub. Based on those assumptions, CBO estimates that 12 SSBN(X)s would cost an average of $7 billion each. In all, CBO expects the entire new class of Boomers would cost about $85 billion.

In light of the crucial role strategic submarines play in the U.S. strategic triad, policymakers may regard them as the most critical part of the Navy shipbuilding plan. If those subs are going to be replaced no matter what happened, and if the Navy receives enough resources to pay for them above and beyond what it might otherwise expect to allocate to shipbuilding, it could buy more surface ships and attack submarines. Under the alternative plan I mentioned earlier, that extra money, about $90 billion over the 30-year period, would purchase 56 additional ships, 19 large surface combatants, 15 Littoral Combat Ships (LCSs), 4 attack submarines, 3 amphibious ships, and 15 logistics and support ships.

Importantly, by 2040, the Navy's fleet would be about the same size as today's battle force, not 50 ships smaller as would be the case under the draft 2011 plan.

Finally, with respect to the BMD mission, in a CBO report last year, my colleague Mike Bennett determined that three ship stations would provide nearly full coverage of Europe from Iranian missile threats by around 2018, once the Standard Missile-3 Block IIA was deployed. However, the Missile Defense Agency has stated that a broader and more demanding mission of defending Europe as well as parts of the Middle East from Iranian missile threats could require up to eight ship stations. Beyond 2020, Missile Defense Agency (MDA) suggests that with improvements in BMD-related missiles, radars and sensors, the number of stations at sea could be reduced to five.

Under the Navy's traditional deployment cycle, 8 stations would require a rotation of 42 ships, whereas 5 stations could require 26 ships to provide continuous BMD patrols.

The Navy could reduce the number of ships needed to provide full-time BMD presence by employing alternative crewing schemes or basing ships in Europe. For example, if the Navy rotated crews to forward-deployed ships, three ships would be needed to keep one operating full time in a designated BMD patrol area. In that case, only 24 ships would be necessary to support 8 stations in the near term, or 15 ships for 5 stations beyond 2020.

The Navy, however, does not currently envision dedicating ships to the single mission of missile defense. Instead it plans to send BMD-capable ships on regular deployments to perform the full range of missions required to surface combatants, although some of those would be operating in or near BMD station areas. Under that approach using rotating crews and BMD-capable ships could prove more challenging because the crews not in deployment would need to maintain a high level of proficiency in many mission areas.

Alternatively, if the Navy was able to use BMD-capable ships permanently in Europe or the Persian Gulf as it does now in Japan to counter the threat of North Korean missiles, it might need as

few as five to eight ships, one for each station. But even in that scenario, if the Navy needed to guarantee that one ship per station was at sea at all times, it would need to double the requirement from 10 to 16 ships.

Thank you Mr. Chairman, distinguished members of the subcommittee. That concludes my formal statement. I am happy to respond to any question you may have.

Mr. TAYLOR. Thank you, Dr. Labs.

[The prepared statement of Dr. Labs can be found in the Appendix on page 49.]

Mr. TAYLOR. The Chair now recognizes Mr. Ron O'Rourke.

STATEMENT OF RONALD O'ROURKE, SPECIALIST IN NAVAL AFFAIRS, CONGRESSIONAL RESEARCH SERVICE

Mr. O'ROURKE. Chairman Taylor, Congressman Akin, distinguished members of the subcommittee, thank you for the chance to speak today on Navy shipbuilding and force structure. With your permission I would like to submit my statement for the record——

Mr. TAYLOR. Without objection.

Mr. O'ROURKE [continuing]. And summarize it briefly here.

The Navy's new 5-year plan reportedly will include about 50 ships, or an average of about 10 per year. Although LCSs and Joint High Speed Vessels (JHSVs) account for less than one-quarter of the Navy's planned fleet, they reportedly count for about half of the 50 ships in the plan. In this sense, these relatively inexpensive ships are overrepresented in the 5-year plan relative to their portion of the planned fleet, making it easier to procure 10 ships per year within available funding. At some point in the future when the LCS and JHSV programs run their course and are no longer overrepresented in the shipbuilding plan, procuring 10 ships per year could become considerably more expensive.

The new five-year plan reportedly contains only two amphibious ships and none after fiscal year 2012. This could result in a dip in workload starting in fiscal year 2013 at Northrop's Gulf Coast yards that might be deep enough to prompt speculation about a possible consolidation of some kind at these yards.

The Navy's new 30-year plan reportedly contains two scenarios depending on whether or not the Navy pays for its new SSBNs out of hide. By drafting these two scenarios, the Navy is, in effect, reviving a debate about whether a service should pay out of hide for platforms that serve a national mission of strategic nuclear deterrence. Congressional Research Service (CRS) testimony two years ago stated that the Navy appeared to be laying the groundwork for reviving this debate.

The 30-year scenario shows that if the Navy pays for the SSBNs out of hide, procurement rates for surface ships could be reduced to levels low enough to make a substantial consolidation of the surface ship industrial base a distinct possibility, if not a likelihood. The scenarios also show that if the Navy pays for the SSBNs out of hide, Navy force levels would eventually drop well below required figures. The resulting fleet would have substantial capability shortfalls.

The projected decline in force levels could immediately begin to generate or reinforce perceptions of the U.S. as a declining power.

Such perceptions could make it more difficult for the U.S. to achieve policy goals in a variety of areas, such as trade, finance, climate change and nonproliferation. Perceptions of the U.S. as a declining power might be particularly likely in the Pacific Basin, where naval forces play a prominent role in military operations, and where China, which is modernizing its navy, is viewed as a rising power. Perceptions in the Pacific Basin of the U.S. as the declining power and China as a rising power could shape the political evolution of that region in ways that could make it more difficult for the U.S. to achieve various policy goals.

Regarding demands for ships for European BMD operations, Department of Defense (DOD) testified last fall that it is considering maintaining two ships at each of three stations for a total of six ships on station in European waters. If the Navy filled that requirement using east coast home-ported destroyers operating on seven-month deployments, then maintaining those six ships on station could require more than two dozen ships. That figure might be reviewed as a high-end or worst-case analysis. It could be reduced in a number of ways. A strategy that combined European home-porting, multiple crewing, taking advantage of transit presence and using an operational tether could reduce it substantially.

The Navy reportedly wants to cancel the CG(X) cruiser and instead procure an improved DDG–51. In assessing this plan, one issue to examine would be the performance that the improved 51 in conjunction with off-board sensors would have against advanced cruise missiles and anti-ship ballistic missiles.

A second issue to examine would be the vulnerability of the off-board sensors and data links and the reduction in performance that would occur if these sensors and data links are degraded by enemy attack.

And a third issue to examine would be the improved 51's growth margin, including the ship's ability to be back-fitted with high-powered, directed-energy weapons such a laser. High-powered, directed-energy weapons could be critical to the Navy's long-term ability to affordably counter cruise and ballistic missiles fielded by a wealthy and determined adversary.

If policymakers decide that the Navy's improved 51 would not be an adequate solution, and that a DDG–1000-based solution would be unaffordable, then other options would include a DDG–51 with modifications that are more significant than what the Navy is reportedly considering, or a new design destroyer that is more affordable than the CG(X) or the DDG–1000. My statement outlines these two options.

Finally, the reported five-year plan would apparently stop LPD–17 procurement in fiscal year 2012. This would make it more expensive to use the LPD–17 as the basis for the LSD replacement because of the lengthy interval between the fiscal year 2012 and the start of the LSD replacement program years from now. Procuring an additional LPD–17 within the five-year plan, perhaps in fiscal year 2014, as the first LSD replacement could reduce the cost of using LPD–17 as the basis for this new program.

Mr. Chairman, this concludes my opening remarks, and I will be happy to answer any questions the subcommittee may have.

Mr. TAYLOR. The Chair thanks the gentleman.

[The prepared statement of Mr. O'Rourke can be found in the Appendix on page 67.]

Mr. TAYLOR. The Chair now recognizes Dr. Loren Thompson.

STATEMENT OF DR. LOREN B. THOMPSON, CHIEF OPERATING OFFICER, LEXINGTON INSTITUTE

Dr. THOMPSON. Thank you. Thank you for the opportunity to be here and discuss my views on the Quadrennial Defense Review (QDR) and future shipbuilding requirements.

The QDR is going to be organized around four themes: prevailing in today's wars, preserving the force, preventing new conflicts and preparing for diverse contingencies. The goal is to balance joint capabilities for coping with conventional and unconventional aggression, an approach that I think poses little danger to the Navy's future shipbuilding plans since all the vessels in the fleet are adaptable and versatile.

However, the current fiscal environment imposes two pressures on the shipbuilding plan that the QDR will not be able to fix. First of all, America's economy has fallen from 32 percent of global output at the beginning of this decade to only 24 percent today, and as a consequence we will not be able to continue sustaining about half of the world's military outlays.

Second, the rising price of military pay and benefits is squeezing technology spending out of the defense budget, creating tensions between the Navy and the Marine Corps as to which ships should be bought. Both of these trends portend bitter debate over shipbuilding plans in the years ahead.

I would like to spend about half of my time talking about the undersea fleets, since that is where our most pressing budget problem is, and then spend the remainder of the time talking about the surface fleet.

Turning to the undersea fleet, I think if you talk to most of the experts in the field, they will tell you the submarines are the one class of warship or the one type of warship that we can count on still being survivable in hostile environments at midcentury.

Now, aside from a handful of special-use submarines, the U.S. Navy undersea fleet today essentially consists of two types of warships: ballistic missile submarines that provide secure retaliatory forces to our nuclear deterrent, and fast-attack submarines, which, in addition to collecting all sorts of intelligence, also conduct an array of other military missions.

The Quadrennial Defense Review will reaffirm the priority of the nuclear deterrence mission, but it will also signal something else, that the bombers and the land-based missiles that are the other two legs of the triad are going to be contributing less capability in the future. So ballistic missile submarines will become even more important in deterring a nuclear attack in the future, and that has two implications.

First of all, we must be ready to replace Trident ballistic missile subs when they begin retiring in 2027. Second, the replacements must be even quieter than the Tridents to ensure they cannot be targeted in a surprise attack. In other words, the Navy can't just build more Tridents; it needs to design a better successor. And in

order for a new sub to be ready on time, the six-year design cycle must commence in 2012.

Assuming a successful design phase, the Navy plans to build the lead ship in 2019, another ship in 2022, and then one ship per year between 2024 and 2033. But each of the Trident replacements after the lead ship is going to cost $5 billion, and the only way to find that kind of money in already overstretched shipbuilding accounts would be to defer other vessels. This funding dilemma is made worse by the fact that the Navy waited too long to ramp up the production of the *Virginia*-class attack subs, so it will now be unable to prevent the attack sub inventory from falling below the required number of 48 once the *Los Angeles* class begins retiring later this year.

The Navy can manage the looming shortfall in attack subs by incrementally extending the lives of legacy subs and lengthening the tours of sailors at sea, but it will have to build two *Virginia*s every year between 2011 and 2025 to avoid falling below 43 boats at the lowest point in 2028. That is now the Navy's projected internal number. The lowest point is 43 boats in 2028.

The good news is that the time and money required to build each new *Virginia* is falling steadily, and there is a lot of things we can do to improve the *Virginia*s if we extend the production run beyond the planned 30 boats.

Nonetheless, we can't accommodate all this undersea design and construction work within likely shipbuilding budgets without displacing required surface levels. So therefore, I think that special steps are going to need to be taken to fund the Trident's replacement. With ballistic missile subs destined to become the most important part of our nuclear deterrent in the future, there is a strong case for funding the Trident outside normal budget channels rather than cutting construction of other warships to cover the cost of our most important military mission.

Turning to the surface fleet, many of you have no doubt heard the hottest shipbuilding rumor spawned by the QDR process. Mr. Akin, in fact, alluded to it in his own remarks, that the number of aircraft carriers will be cut from 11 to 10 or even to 9. I can assure you that if that happens, it won't be because the Navy wants to do it.

It is true that we are headed down to 10 in 2013 because there is a 33-month gap between when the Enterprise goes out of the fleet and the first *Ford* class comes in. The Enterprise would be prohibitively expensive to refuel because it has, if you can believe it, eight reactors. But that is only a temporary situation.

Although the Navy could meet current warfighting requirements with one or two less carriers, a permanent cut wouldn't be prudent for two reasons. First of all, warfighting requirements are going to change in the future. We don't know how, but they will change. Secondly, there is a high likelihood that wartime attrition will occur in the future, so it makes little sense to cut the number of carriers to the absolute minimum currently required. And the Navy 2011 shipbuilding plan will call actually for maintaining 11 flattops through the year 2040.

Now, there is a lot to be said that is nice about the next class of carriers, the *Ford* class, that will be the successor to the *Nimitz*.

It delivers more sorties, it delivers more power, it delivers more protection. In addition, it reduces crewing requirements by several hundred personnel at least over the lifetime of the ship, which means that during the time it is operating, roughly 50 years, it will save nearly $5 billion in operating costs.

However, I think the real key to the future viability of aircraft carriers may not be a new hull; it may be getting better airplanes on the flight deck. We have to push ahead with the F–35 because it is stealthy, and the Navy next has to step ahead, go ahead with the unmanned combat air vehicle because it is unmanned and stealthy; otherwise I am not very optimistic about the survivability or utility of carriers in the western Pacific as we get to midcentury.

Well, I wish I could say that the story was that simple for the rest of the surface fleet. What we see there, though, is an unsettled picture created in equal parts by lack of money and lack of agreement between the Navy and the Marine Corps as to what needs to be bought.

In the case of the surface combatants, the Navy is poised to abandon two of the three new classes that it announced at the beginning of the decade. It wants to walk away from what was then called the DD(X), now DDG–1000, land-attack destroyer after three ships, and it also wants to cancel the CG(X) next-generation missile-defense cruiser. Instead its plan is to build an upgraded version of the multi-role DDG–51 *Arleigh Burke* destroyer while upgrading other *Arleigh Burke*s and *Ticonderoga*-class cruisers, Aegis boats, that are in the fleet today.

Now, I think those plans make sense. The DDG–1000 is too expensive to populate a 300-ship fleet, and its concept of operations will put a very valuable asset too close to enemy shores. CG(X) will probably not be needed at all once the Aegis combat system is upgraded on legacy destroyers and cruisers because the tracking of ballistic missiles doesn't have to just be done from a ship; it can also be done from space by systems like the new Space Tracking and Surveillance Satellite.

The third new combatant announced at the beginning of the decade, the Littoral Combat Ship, is essential to expanding fleet numbers to 300. I think Mr. O'Rourke referred to the fact that we have managed to get the shipbuilding numbers up by building a lot of smaller, cheaper ships, like the Littoral Combat Ship, and I guess also the Joint High Speed Vessel. But it really is essential for that reason for getting the fleet back up above 300 again. However, the Navy has decided for budget reasons to down-select to a single design. That step really was necessary because it is very expensive to try to maintain, upgrade and equip two different classes of ship for what is essentially the same mission. I predict that if the winning team does a good job of building this ship, then the service never will go to a second source, that it will try to save as much money as possible by sticking with one source.

Finally, as for the amphibious warfare fleet, that part of the force posture looks likely to be a focus of controversy for many years to come. The Navy and the Marine Corps have parted ways on the need for 38 amphibious warships, and as a result the Marines are now lobbying the Congress to fund vessels that are not included in the 2011 shipbuilding plan.

To say they have parted ways is a bit of an understatement. It is not just that the Navy wants to buy fewer than 38 in the future; it wants to buy fewer than 30 in the future.

Personally, I agree with the position Chairman Taylor expressed last year that we should fund serial production of new amphibious assault and transport ships to provide the core of the future sea base and replace aging vessels, but that does not seem to be where the Navy wants to go. Secretary Gates has foreshadowed the possibility that reductions in amphibious warfare capabilities may emerge from the Quadrennial Defense Review, but I would urge you to look very closely at the reasoning about future threats and requirements before you go along with that plan.

Well, I have exhausted my time, so let me just close by observing that even if we kill the DDG–1000, and even if we cut back on our amphibious warfare capabilities, the Nation's naval shipbuilding requirements are not likely to fit within projected budgets. Therefore, I think we need to have a discussion about how important nuclear deterrence is to national survival and fund the submarines supporting that mission in a way that does not hobble other sea-service missions. Thank you.

[The prepared statement of Dr. Thompson can be found in the Appendix on page 89.]

Mr. TAYLOR. The Chair thanks all the gentlemen. And I want to begin with the very basic question, and I deeply regret—again, I want to make this perfectly clear, I consider Secretary Mabus my friend. I voted for him, State auditor, and I voted for him twice for Governor, and I wish he were here today. I also had a very good friend by the name of Mike Parker, retired as the Under Secretary of the Army after one day for speaking his mind rather than what Secretary Rumsfeld wanted him to say. So I understand the constraints on the Secretary. But I do wish he was here today.

If the Secretary was here today, I would say to him, thus I am going to say it to you; the President has outlined a plan to put our Nation's national missile defense on ships. How many do we need to do that adequately? What is it going to cost either to convert an existing DDG–51 or to build a new version of the 51 for that purpose?

And I will start with you, Dr. Thompson. How many do we need? What is it going to cost? What is the most likely way that this is going to be done, through a conversion of a 51 or a new class of 51s?

Dr. THOMPSON. Well, I don't think we are going to need a CG(X) cruiser to begin with. I think the Navy has come to the same conclusion. The original plan for taking the hull of the DDG–1000 and using it also for a foundation of a missile-defense cruiser was predicated on the belief that you needed a lot of power generation and a very big sensor, because all of the tracking and discrimination of enemy warheads was going to be done by one radar on one ship.

We don't really need to go that route. We are living in the era of networked warfare, and therefore there is the possibility not just for netting together all of the Navy's sensors at sea, but also overhead sensors from the Joint Force and the Intelligence Community. If you do that, then you have the potential to track incoming ballistic missiles, including all sorts of confusing things like penetra-

tion aids, decoys, debris and so on pretty precisely, and therefore you can do that from a DDG–51 with less power requirements and a smaller sensor because you have so many different eyes on the target.

Having said that, though, the requirement for the ships is driven mainly by two things: What level of protection do you want? We have spent tens of billions of dollars to deploy a land-based ICB defense of the United States, and yet it could not stop a determined Chinese or Russian attack.

The second thing is what sorts of technology breakthroughs do we reasonably expect we can achieve in terms of radar weight, in terms of power aperture, efficiency and that sort of thing? I am not—being a liberal arts major, I am not going to give you a precise answer on that; however, I would say that if this is going to provide most of the defense for the continental United States in phase 4, the White House's announced plan, in other words by being able to deal with Intercontinental Ballistic Missiles (ICBMs) in addition to short- and medium-range missiles, we are probably talking about dozens of Aegis class vessels.

Mr. TAYLOR. Is that in addition to the existing fleet, or is that taking the existing fleet and modifying it for that purpose?

Dr. THOMPSON. Well, most of the money and most of the effort is going to be spent upgrading the preponderance of the *Ticonderoga*s, not all of them, and virtually all of the Aegis destroyers. However, those ships appear to be committed to other missions at the present time, and so I would have to conclude that when I say dozens, it is dozens above and beyond the existing requirement.

Mr. TAYLOR. And do you see any evidence—and I would open this up to the panel—do you see any evidence that the Administration is actually moving in that direction? I know they have said they are going to do it, but as far as budgeting purposes not only for next year, but for the foreseeable future, have you seen any evidence, any indications that they are following up that pledge with the actual purchase of the ships to do the job?

Dr. THOMPSON. Not the hulls. They are certainly investing in the sensor and computer technology, they are developing the munitions, but they are not funding the number of hulls that would be required to ship most of this mission for continental missile defense to the Navy.

Mr. TAYLOR. Dr. Labs, do you want to answer those questions?

Dr. LABS. Sure, Mr. Chairman.

I don't disagree, I think, with anything that Dr. Thompson said. I would just add a few observations in addition to that.

The Navy's 313-ship requirement, which was developed, if memory serves correctly, back in about 2006, had a requirement for 88 large surface combatants. That was a requirement that was developed at that time where the BMD mission was not part of the equation. So to the extent that the BMD mission is now going to be layered on top of that requirement, obviously additional ships in some number would be required.

How many ships, you ask? That would depend again, as I sort of indicated in my testimony, how many stations are you going to have where ships need to be in constant patrol? Are those ships going to be in constant patrol? Do we need to have them there pro-

viding coverage 24 hours a day, 7 days a week? If that is the case, I would agree with Dr. Thompson that the requirement for ships is in the order of dozens, as my statement indicated. On the other hand, if you think you can just surge ships to the area when a crisis is developing, if you want to provide the coverage that way, then the number would be considerably less and possibly even done as part of the existing requirement of routine deployment of surface combatants.

Another factor would be do you change how the rotation factor occurs; is it the traditional rotation from the east coast, or do you try to do multiple crewing? That, too, will sort of affect the number of ships.

Mr. TAYLOR. Before you get too far along, you said a destroyer in the course of its routine operations. In your opinion or in the panel's opinion, can a destroyer that is performing escort duty for a carrier also be counted on to provide ballistic missile defense?

Dr. LABS. I would not necessarily want to count on a destroyer that is providing escort to a carrier to do that. But we also do deploy surface combatants independently or part of surface action groups that are not necessarily doing duties in carrier escort. But it is certainly possible, depending on what the nature of the mission is or what is occurring, whether that is possible. If you have a crisis situation, and you are worried about protecting the carrier from the same sorts of threats that you want to protect European cities, for example, then you are going to need additional ships to provide, in my opinion, that additional coverage.

Mr. TAYLOR. Thank you, sir.

Mr. O'Rourke.

Mr. O'ROURKE. Just three quick additions to what has been said already. In terms of evidence that the Navy has funded what they are talking about in terms of conversions of existing ships, it is my understanding that it is the Navy's plan, and it has been for the last year or two, that every DDG–51 eventually be converted to a BMD configuration, and taking a regular 51 and converting it to the current BMD configuration costs about $40- or $45 million. It is my understanding for a year or two now that that is the Navy's intention. So the Navy is resourcing the idea of having many, virtually all, of its 51s and at least five of its Aegis cruisers be converted for BMD capability.

In terms of funding new builds, if the press reports are accurate about the cruiser destroyer requirement increasing to 96, then those press reports also indicate that the Navy is not fully resourcing that, because even under the scenario where the Navy does not have to pay for the SSBNs out of hide, and the other shipbuilding programs are consequently not reduced, the Navy is still not achieving and maintaining a 96-ship cruiser-destroyer force, according to the tables that were published.

And third, in terms of the additional burden on the cruiser-destroyer fleet, one way of looking at it is to note that over the past few years, the Navy has maintained an average presence in European waters of about 1.7 cruisers and destroyers, and now we are looking at increasing that to something like 6, perhaps, if we have 3 stations with 2 ships each. And then Eric is taking you through the preliminary math on what that may mean. My math is not

really substantially different from that. That means if demands for cruisers and destroyers in other parts of the world do not decline, then the mathematics of this net increase in the cruiser-destroyer presence level in Europe are going to increase demands for cruisers and destroyers overall by about that much.

Mr. TAYLOR. In your opinion, going back to the question by Dr. Labs, can a destroyer that is providing escort to a carrier also be counted on to provide national missile defense?

Mr. O'ROURKE. I think it is problematic in the sense that the carrier is not necessarily always going to be in the location that would be optimal for doing the BMD mission. Just because the carrier, for example, is in the Mediterranean doesn't mean it is in the right part of the Mediterranean to do that mission. So there may be portions of time during which that cruiser or destroyer might be in a good location to take on that mission while it is also performing other missions, but at other times it is not going to be in the right part of the Mediterranean to do that.

Dr. THOMPSON. Mr. Chairman, could I add one important qualifier?

Mr. TAYLOR. Sure, Dr. Thompson.

Dr. THOMPSON. Every Aegis destroyer that is upgraded from 2012 on will be qualified to do ballistic missile defense, as will 15 *Ticonderoga*s. However, when they say "qualified," what they mean is it will have the ability to shoot down a short- or medium-range missile carrying a unitary, meaning a relatively simple warhead. If we are looking at an intermediate- or an intercontinental-range missile or something carrying sophisticated penetration aids like decoys, it wouldn't be able to do most of that. That requires additional steps that were in the White House plan announced in September, but the cost becomes quite imposing if you go up from that level of capability.

Mr. TAYLOR. Thank you, sir.

Chair now recognizes the gentleman from Virginia, Mr. Forbes.

Mr. FORBES. Thank you, Mr. Chairman. And, Mr. Chairman, I want to thank you for the integrity and tenacity you bring to this subject and to this subcommittee.

And, gentlemen, thank you so much for being here.

Mr. TAYLOR. Mr. Forbes, you are the acting Ranking Member, so you will not be subject to the five-minute rule.

Mr. FORBES. Thank you, Mr. Chairman. I will try to stay as close to that as I can.

I would also like to take us out just for a moment from the trees and take a look at the forest. And when I am traveling around now and I am talking to people about national defense issues and budgetary issues, I constantly hear this word "frightened" from a lot of people.

One of the things that frightens me are two things. If you turn around, you will see all of these empty chairs behind you, and it bothers me to no end, frightens me, that the Navy is not here asking or responding to our questions today. It frightens me that the law requires that the Navy give us a shipbuilding plan, and they just refuse to do it. And it frightens me that when this committee then under a congressional inquiry demands that they give us that shipbuilding plan, they just refuse to do it.

And I am looking at some of the projections that we have had, and we have had testimony in years past where we looked at the Chinese, for example, and what they were doing with aircraft carriers, and we were basically told, no, they are not going to build aircraft carriers, and then that flipped, and we were told about the subs that they weren't building, and that flipped.

Just recently we had the Military Power of the People's Republic of China report, which I am sure all of you are familiar with, that projected that the Chinese had 260 ships in their fleet. Last week Admiral Willard came in and testified they have 290 ships in their fleet. That is a big difference in just a short period of time when you look at the fact that we are looking at about 287 ships.

We also just had a report in the Washington Times that the White House National Security Council has recently directed the U.S. spy agencies to lower the priority placed on intelligence collection for China, and that was despite the opposition from senior intelligence leaders who fear it would hamper efforts to obtain secrets about Beijing's military and cyber attacks.

And here is my question for you: Why are our estimates always seemingly so far off? That seems like a big gap, 260, 290.

Secondly, do you see any shift now; is it a concern to you that our budget is now possibly playing a greater role in a ship acquisition policy or policies than maybe our defense posture is playing in those same policies?

And then the third question is, how is our force structure being shaped by the growing capability of the Chinese Navy? And does it concern you at all if we are lowering our intelligence-gathering capabilities from what they are doing? And I throw that out to any or all of the three of you.

Mr. O'ROURKE. I guess I could start on that.

As you know, I maintain a CRS report on Chinese naval modernization. I initiated that report in November of 2005. It has been updated more than 40 times. And I did that to make sure that there was a readily available source of information for Members and staff on this topic.

In terms of what role China's naval modernization is playing in Navy force structure, I guess I would say this, that I think there are a number of relatively expensive investment programs in the Navy's plan that to one degree or another are China related. And so if China does not become a sizable element of the public discussion over U.S. defense plans and programs, then I think that creates a possibility that some of those programs may not be fully funded.

One of those programs was the CG(X) cruiser, and the press reports are now indicating that that program has been cancelled, and the Navy is reportedly proposing to do that because they are familiar—they are now comfortable with the idea of doing the mission a different way with the approved 51s and the netted sensors. But nevertheless, I think that if the Navy had its druthers, and if its resources increased, it might have preferred to still go ahead with that program.

And in terms of intelligence collection, one of the ways of responding or of programming with a consciousness towards Chinese naval modernization is to take steps to increase intelligence and

monitoring what is going on in China's Navy, and I have talked about that in my CRS report on China naval modernization. And so if you were to increase the emphasis that China plays in your defense plans and programs, that is one of the things that you would want to emphasize.

Dr. THOMPSON. I certainly don't think we are underfunding the intelligence function. The Director of National Intelligence stated 2 months ago that we are spending $75 billion a year on intelligence, which is a lot of term papers. However, I am afraid that our performance is not improving in this new era. We have a pretty bad track record. We didn't see Pearl Harbor coming. We didn't see North Korea's invasion of the South. We didn't see the Tet Offensive. We didn't see the collapse of communism, and we didn't see 9/11. Yes, there were some analysts off in some obscure places saw it coming, but the system didn't see it coming.

And the implication that I draw from that, I mean, even now, when I see the intelligence of this decade saying—the intelligence community saying, you know, Iraq, they are developing nuclear weapons and Iran isn't, when we all know the opposite is the case, right? When you see something like that, what it tells you is: don't count on the intelligence. Having a margin of error in your military posture, funding on the assumption your intelligence analyses are wrong, is the only prudent thing to do.

Mr. FORBES. Mr. Labs.

Dr. LABS. I guess the only thing I would add to that, to your point, is the role of budgets, sort of, playing too large of an issue relative to our other priorities in defense policy.

Certainly in all the time that I have been doing defense policy in Washington, working for CBO, there has always been a balance between your defense priorities and how much money you have to spend on that. And the question always comes year to year is, you know, where is that balance filling out? Is what you buy and what you choose to do being driven primarily by cost, or is it being driven primarily by the strategy that you are seeking to do?

And the balance that goes on there is something that every Administration juggles. And I am not sure that I am in a position to really judge whether the budget is getting too much emphasis today compared to what the strategy should be. I know that you can't, sort of, go about developing a strategy in the absence of a budget, because if you could do that, you wouldn't need a strategy; you could just do everything you possibly wanted. There is always a balance of, sort of, costs and risks, and how that balance is weighing out is certainly worthy of discussion and should be part of the defense debate.

Mr. FORBES. Yeah, I guess the thing that concerns me most is we don't get to have that debate because we don't have the Navy here to ask those questions and we don't have their shipbuilding plan to ask them questions about.

But thank you so much, gentlemen.

Mr. Chairman, I yield back the balance of my time.

Mr. TAYLOR. The Chair thanks the gentleman and wants to remind the gentleman that the Navy will be here in February, but we certainly wish they had been here today.

Mr. Hunter has expressed that he has a conflict and needs to leave fairly shortly. So, if there is no objection, I am going to recognize him out of order for five minutes.

Mr. HUNTER. Thank you, Mr. Chairman. And, again, thanks for your leadership on this and for the great support that you show for our manufacturing base as well as our national security when it comes to the Navy.

First question, Dr. Thompson, when you talk about the fallout between the Navy and Marine Corps, is this because of a shift in the way that the DOD looks at surface fires now for land invasions? Is that kind of what we are talking about or what?

Dr. THOMPSON. It is a lot bigger. It gets to a fundamental disagreement about what the future role of the Marine Corps should be. It gets to a level where the Navy—the political appointees in the Department of the Navy actually want to change the phrase "forcible entry" to "theater access." This is a substantial watering down of the whole concept that we have been building toward for a decade. It is less amphibs, it is less mine sweeping, it is less naval surface fires, it is pretty much less of everything, so the money can go to other priorities.

Mr. HUNTER. You said that the Marine Corps's mission, the Navy is trying to redefine it. But is the Navy's mission being redefined to, meaning they are going to stay offshore more? And is that possibly due to fewer ships? Each ship is so much more valuable now that they don't want to risk and they don't want to get in close?

Dr. THOMPSON. The Obama plan, as set forth in general terms by Under Secretary Work, is $15 billion a year for shipbuilding. That is somewhat more than we have been funding recently. So I don't think we can blame it on lack of ships.

There certainly, though, has been a breakdown in the consensus between the Marine Corps and the Navy since the Obama Administration began about what the proper purpose of expeditionary forces are and what resources are required to support them.

Mr. HUNTER. When did that shift happen? And any of you, please, chime in here. Is this kind of a new shift in thinking in the Pentagon, or has this been around for a long time and it has suddenly prevailed recently?

Dr. LABS. Well, I think that the debate between what is, sort of, the proper role of the Marine Corps and the sourcing for amphibious ships has actually been around for quite some time. I mean, many people have discussed in the past about how, you know, the amphibs, the Gators are all sort of the poor man's Navy and that they don't receive, necessarily, the highest priority in the shipbuilding accounts.

And all of this stems, in my judgment, from the budgetary pressures that are on the Navy shipbuilding account but also in other procurement accounts as a whole. And if you have a program that is this big and you have this much to spend, you are going to look for things to cut. And changing whether you want to do a forcible entry capability as, sort of, a national capability to maintain is one way to, sort of, reduce your requirements for ships.

Mr. HUNTER. So it is strategic—it isn't based on national security and what we want to do; it is based on what the budget is. And we are then defining what we want the Navy's mission to be or the

Marine Corps's mission to be not by what is needed but by what the budget is.

Dr. LABS. I am saying that that is certainly one factor in the equation.

Mr. O'ROURKE. The press reports about the Navy's new shipbuilding plan include a draft version of the Navy's report on their new 30-year plan. And, in that draft report, there is an acknowledgment that the dropping of the MPFF requirement is something that was basically fiscally driven, that the requirement is viewed as valid but not currently within the Navy's reach bugetarily. And that is something that would be near and dear to the Marine Corps in terms of their ability to launch and sustain operations ashore from a position at sea.

And I tend to agree with Eric. I think that the tension between the Navy and the Marine Corps about what kinds of ships should be in the shipbuilding plan goes back a fair ways. And I think there is a sense among some observers, correct or not, that the Navy may accord a lower priority to amphibious ships because they are not essential to the Navy's own combat mission, as they are to the Marine Corps's. And, in the presence of constrained funding, that tension can come out between the two services.

Mr. HUNTER. Thank you, gentlemen.

Thank you, Mr. Chairman, and to my colleagues for your latitude on my questioning.

Mr. TAYLOR. The Chair thanks the gentleman.

The Chair now recognizes, in the order of people who were here at the time of the gavel, Mr. Larsen for five minutes.

Mr. LARSEN. Thank you, Mr. Chairman.

Going back to missile defense and ballistic missile defense and so on, we are also—a few of us are on the Strategic Forces Subcommittee, which oversees missile defense, so I want to just explore this a little bit.

Obviously, we have talked about how the Navy is increasingly being called on to perform ballistic missile defense operations. The preferred platform for the mission appears to be the 51.

Help me understand. Does the future shipbuilding plan envision the 51 being the sole platform? Is that the assumption that you all are operating under?

Mr. O'ROURKE. The reported shipbuilding plan would have the 51 be the dominant BMD platform, along with some number of cruisers. But, numerically, it would be a very large number of 51s, plus some number of cruisers in addition to that.

Mr. LARSEN. Mr. Thompson, going back to what you were talking about with regards to the 51s and the radar capabilities of the 51s and modernizing them, is there a choice to be made between, say, modernizing the 51s with Aegis versus a different approach to radar tracking for missile defense?

Dr. THOMPSON. There is a wide menu, a big menu of options for doing this. I think the reason the Navy favors the Aegis solution is that it is relatively cheap compared with the alternatives. And, secondly, if you buy an Aegis warship, you don't just get a ballistic missile defense capability; you get air defense, you get antisubmarine, you get a limited land attack capability, and all sorts of other things.

So, from the Navy's point of view, they are acquiring a multi-mission warship which can be continuously upgraded for a wider range of ballistic threats also.

Mr. LARSEN. Yeah. Would that be consistent, Dr. Labs, with your thoughts on that?

Dr. LABS. Yes, Mr. Larsen. I think that what the Navy is pursuing, at least based on press reports that we have seen so far, is they are going to pursue the 51 for the foreseeable future. They are going to upgrade everything that they have—well, most the cruisers and then all of the 51s—to do that.

And they will follow on with continuing to build 51s or some modified version of them, driven in part because they think it is probably the most cost-effective solution and also in part because it is, from their perspective, one of the least technically risky solutions. They are very familiar with the Aegis system. They are very familiar with the hull. And they think they can do what they need to do with the least amount of technical risk to be able to get the capability out to the fleet that they want.

Mr. LARSEN. I think, you know, we may have a debate about this in the future. We could probably all agree on least technically risky approaches.

But getting to that question, we passed a procurement reform bill this last year. Presumably we are taking a whack at the other 80 percent of procurement we didn't touch.

Is there anything in those bills that can provide us some—I wouldn't call it hope, but provide some direction that maybe the cost estimates that we are hearing about from you all can be at least incrementally or marginally less?

Dr. THOMPSON. Oh, yeah. I mean, actually, the Navy—you would never guess it to read the press coverage, but actually the Navy is doing a better job than the other services of getting its costs down and getting ships out to the fleet faster. The Littoral Combat Ship made it to the fleet in half the time that a traditional warship did.

In the case of the *Virginia* class, I think the *Missouri* is going to deliver in 62 months, whereas the initial ship was like what, 86, 88 months? And, as a result, the number of man-hours required to build the first ship, 15 million, has fallen to below 11 million now, if I have that right. And the cost has come down by nearly 20 percent.

I mean, not only is there clear evidence in the Department of the Navy that you can save money by doing this differently, but they have actually—there is actually a lot of other room for doing things like that. Like the chairman's idea of doing serial production using the same amphibious hull for a range of future warships rather than always coming up with a new class and breaking the multiyear packages. There are lots of ways of saving money.

Mr. LARSEN. Mr. O'Rourke, have you given thought about the procurement reform legislation we passed into law and how that applies to future acquisition and how it impacts your analysis? Does it at all?

Mr. O'ROURKE. I guess the one thing I would say is that the Navy has come through a period where it has recently introduced several new ship designs. And so the Navy is now looking forward to a period where it is introducing relatively fewer new ship de-

signs and is spending more of its time, proportionately, on getting into regular, serialized production of existing designs.

That, sort of, gets you away from defense acquisition reform, because it gets you away from the issues that are posed when you start a new acquisition program. But, in a sense, that is precisely the Navy's point, that they are not going to be initiating that many new shipbuilding programs in the future and, consequently, can concentrate on the efficiencies that can come by putting existing designs into regular, serialized production.

Mr. LARSEN. Yeah. Yeah.

Thank you, Mr. Chairman.

Mr. TAYLOR. The Chair thanks the gentleman.

The Chair now recognizes Mr. Coffman for five minutes.

Mr. COFFMAN. Thank you, Mr. Chairman.

The first question is on nuclear propulsion. It is only the aircraft carriers that are nuclear at this point in time, and I think our chairman has raised, a number of times, the vulnerability of other ships and their refueling needs.

How significant are the capital costs to have the lesser ships be having nuclear propulsion systems? Can you amortize those costs out to where the operating costs are much less over time, even though the costs are more significant up front? Give me an analysis along with the tactical advantages of having nuclear power.

Dr. THOMPSON. Well, let me just say one thing up front, which is that the ship that we have been talking the most of adding to the nuclear fleet are the large surface combatants, and the Navy is in the process of killing all those. So we are reduced in terms of our options for doing that.

But, having said that, your point about amortization is exactly right. Unfortunately, our political system does not respond well to the notion of amortization unless everything can be amortized before the next election cycle.

It costs a lot more up front to equip a ship with nuclear power. It costs a lot less down the road to operate it with nuclear power. But the system is much more responsive to the upfront costs than to the later operating burden.

Mr. COFFMAN. Okay.

Dr. LABS. Mr. Coffman, CBO actually has a study right now under way that looks at the question of nuclear versus conventional propulsion. And some of the information I will give here, you know, it is preliminary; we haven't sent the study through our review process so far. But the increased capital costs to a nuclear-powered ship can be anywhere from 20 percent to 50 percent higher initial upfront cost, depending on the size of the ship and the type of the ship that it is.

And then you clearly save money over the long run by not having to pay for fuel, but the cost of the break-even point of that savings will vary from ship type to ship type. Like, for example, large amphibious ships and large surface combatants, which we are no longer planning to buy apparently, we would have broken even around $200 a barrel for oil based on our assessment so far, with other ships, smaller surface combatants and smaller amphibs, at a much higher, you know, oil price break-even point.

So, depending on—and that is strictly on the cost side. Obviously, it gives you a number of tactical advantages, which Dr. Thompson referred to, that can be factored into that equation.

Mr. O'ROURKE. Just very briefly, I think Loren is correct in noting that the principal opportunity for introducing nuclear power into surface ships other than carriers was the CG(X). If the CG(X) is cancelled, then it becomes harder to find other programs that will present near-term opportunities for that. The only remaining area, I think, would be in terms of the large amphibious ships. And if we are sticking with the current designs of those ships, then you wouldn't necessarily have an opportunity to introduce nuclear propulsion there either.

While we are waiting for the new CBO report to come out, it can be noted that the Navy performed a study on this issue in 2006, at the request of Congress, very much at the request of this committee specifically. I have summarized the findings of those studies in a CRS report on the issue of nuclear propulsion for surface ships.

And, basically, at the time, the Navy concluded that putting nuclear propulsion onto a larger surface combatant would increase its upfront procurement costs, other things held equal in that ship's design, by several hundred million dollars. I think it was something in the range of $700 million. And the Navy calculated a break-even price for oil on a lifecycle basis, as Eric mentioned. And the break-even analysis is summarized in the CRS report.

But the main point is that, if you don't have a CG(X), then you don't have a near-term program for thinking about putting nuclear power more widely into the surface fleet anymore.

Mr. COFFMAN. Okay. The last question is, if the QDR does reflect the Navy's point of view about theater access versus forcible entry, what does that do to the Marine Corps's Expeditionary Fighting Vehicle program?

Dr. THOMPSON. The short answer is that the Administration would like to kill it.

There is a lot of maneuvers going on behind the scenes. In fact, I am not sure what the Marine Corps will do if it doesn't get the FV. There is no obvious alternative. It probably is going to perform a lot better.

But I think a political decision has been made that this is one of the programs they are going to target. So what they are really looking for now is some excuse, in other words, some failure in the reliability testing that will provide the venue or the vehicle for allowing them to kill it. They all know that there is no real alternative to the thing, but they have decided that they don't want it to continue.

Mr. COFFMAN. Anyone else?

Mr. Chairman, thank you very much. I yield back.

Mr. TAYLOR. The Chair now recognizes the gentleman from Connecticut, Mr. Courtney, five minutes.

Mr. COURTNEY. Thank you, Mr. Chairman.

Dr. Thompson, you, I think, did a nice job about laying out the challenge of funding the SSBN production and, you know, what pressures that puts on the rest of the program. And you talked about paying for development and procurement outside of the naval

shipbuilding account. I mean, is there any precedent for that? How do you envision, sort of, doing that?

Dr. THOMPSON. Well, you know, we pay for most of our nuclear weapons in the Department of Energy in a completely separate budget item. What is it? I don't know remember what the exact budget number is, but it is even a different Cabinet department. And we have been doing it that way since the beginning of the Cold War.

The problem that we have here is that we are expecting tactical and one service or two mission services to be traded off against national survival-level missions, and it is an apples-to-oranges comparison. I see this happen in the Air Force all the time because they are responsible for the spy satellites, they are responsible for the intercontinental ballistic missiles (ICBMs), and so on. And, yet, they have to trade that them off against, do I want more F–22s? And guess what decision they usually make? It is a bad way to do tradeoffs.

And I think if we took this handful of national missions that are absolutely crucial, like nuclear deterrence, and put them in a separate category and funded them as if they were a first priority independent of intra-service tradeoffs, we would probably get a better outcome.

I might mention parenthetically that in my two associates' prepared remarks the point comes up that, if we were to do that while leaving the planned shipbuilding budget at the level currently expected, in other words, around $15 billion, but we took SSBN(X) out and treated it separately, we would probably solve most of our forward shipbuilding problems.

Mr. COURTNEY. So, when the QDR comes out, which, I mean, as you point out, one of the predictions is that the triad is going to become less of a triad and more of a—I would guess that would be the opportunity——

Dr. THOMPSON. Correct.

Mr. COURTNEY [continuing]. To really, sort of, pose the question about, well, okay, since we are creating a greater reliance on that platform, then maybe we have to recognize that by elevating it to a different place——

Dr. THOMPSON. Correct.

Mr. COURTNEY [continuing]. In terms of where you pay for it.

Dr. THOMPSON. I mean, the bombers are already falling out of the force, and there is a significant likelihood that we will trade away a wing of ICBMs to the Russians to bring the numbers down. So you are left with something that doesn't really look like the triad. It is mostly Trident warheads.

And, in a situation like that, you have to make certain you build the boat the right way and you have it ready at the right time. I think that is a strong argument for doing it differently than you would a new class of warships.

Mr. O'ROURKE. As an addendum to what Loren said and to answer your question about whether there was a precedent for treating things budgetarily this way, you can argue that ballistic missile defense is just such a precedent. That is not a service, that is a mission, and yet it is its own category in the defense budget that contains funding for BMD capabilities in various services.

So if BMD has been separated out as a mission area for collocating a variety of spending that contributes to that mission, you can argue that that is a precedent for then taking strategic nuclear deterrence as a mission and then locating their variety of funding from various services that contributes to that mission, so that the spending of that can be optimized at the mission level rather than having it separated down into the services where it competes against the other missions of those individual services.

Mr. COURTNEY. And so, Ron, is that, you know, sort of, an Appropriations Committee sort of task, or is it a policy committee—again, if you really wanted to, sort of, move forward with that kind of model?

Mr. O'ROURKE. I don't know that it is more one side of the House or the other, but it is something that the authorizers and the appropriators could have a dialogue on to see whether they wanted to have the budget restructured in that way.

Dr. LABS. Just, because it wouldn't just apply to, obviously, the procurement accounts. You are talking about somewhere, you know, in the neighborhood of probably $8 billion to $10 billion in R&D before you even get to procuring the first ballistic missile submarine, which, in their own right, is going to be a $10 billion or $11 billion ship, the first one.

Mr. COURTNEY. Well, I think as the chairman said, we are going to probably have this conversation at another hearing. And my time is running out, so thank you for your answers.

Mr. TAYLOR. The Chair thanks the gentleman.

To that point, Dr. Labs, I would hope at some point that we could have a conversation, again, for the *Ohio* replacement submarine that probably would not be delivered for 15 years. It is my understanding that the purpose of this follow-on vessel is to carry the D–5 missile, because the D–5 missile will not fit in the *Virginia*-class submarine. So this is a fleet that doesn't even start to get delivered until 2025.

I think the question we need to ask right now is, is the D–5 missile still going to be the missile that this Nation wants as our nuclear deterrent in 2025 and for 20 to 30 years beyond that? And I would welcome your thoughts on that.

I would hate to build a replacement for the *Ohio*-class submarine built around the D–5 only to find out in 2025 it is no longer the missile that our Nation wants to build our nuclear deterrence around. And I would hope the Navy is looking into that, and I would ask your organization, as well, to give us some thoughts on that.

Dr. THOMPSON. Mr. Chairman, there are some things the Navy is already doing in that regard. They actually are planning to make the tubes on the next-generation satellites slightly bigger than what a D–5 would require because their estimate is that circa 2040 they will need a different missile. They start with the D–5, but then they actually are considering moving to a bigger missile as a follow-on.

Mr. TAYLOR. Okay. Whatever information you have along those lines, I would welcome, Dr. Thompson.

The Chair now recognizes the gentleman from Rhode Island, Mr. Langevin.

Mr. LANGEVIN. Thank you, Mr. Chairman, and thank you for holding this hearing. It is very interesting and important at this time.

And, gentlemen, I want to thank you for your testimony here today.

My question is for the panel. With the possible deployment of anti-ship ballistic missiles, there is, I would say, a need for increased effectiveness of existing Aegis BMD ships and a new level of fleet protection. And I am sure that you are aware of the capability of the Cobra Judy Replacement ship. And I have been briefed that the augmentation of a platform like this with BMD capability can actually be used as a near-term, cost-effective naval adjunct sensor.

So can you speak to your assessment of this capability and how one or more of these ships could impact the number of BMD-capable cruisers and destroyers we might need for this mission.

Mr. O'Rourke.

Mr. O'ROURKE. Yes, actually, I have been following the proposal for doing something like that since I testified before this subcommittee in July of 2008. In that testimony, I referred to it as an "adjunct radar ship." And there is a proposal from industry to build several of those ships to act as adjunct radars so that the radars on the surface combatants don't have to be as big.

It may not necessarily reduce the numbers of cruisers and destroyers you need, but it would allow you to do the mission with cruisers and destroyers that had radars on them that are not as big as they would otherwise need to be because some of that radar burden is being picked up by these adjunct radar ships.

So that proposal is out there. My understanding is that the Defense Department and the Navy have been made aware of it and that they have seen the outlines of it. I do not know what the status of that proposal is inside the Navy or DOD deliberations.

Dr. LABS. My understanding is the same as Mr. O'Rourke's. We have often had briefings on the subject—or on occasion we have had briefings on the subject, and I wouldn't have anything more to augment to that.

Dr. THOMPSON. There is a lot to be said for proliferating the sensors, because it means that any given radar no longer has to carry the full burden of doing the tracking. All I would say is that, if we are going to do this, I hope it is done outside the SCN budget, because one thing we don't need is another limited class of ships that, you know, cost more per unit than the other ships do.

Mr. LANGEVIN. Would this relieve the burden of the Aegis cruisers having to—we talked about, if they were part of the force defending the carriers, that they wouldn't necessarily be in the right place at the right time. So does that deal with that issue, that problem?

Dr. THOMPSON. Depending on how they were deployed, it could make a significant difference in terms of how many Aegises you needed in a particular area of operations or what level of proficiency, what level capability each Aegis had to have. Because, as you put more sensors on the target, you collect more information. If you can net it and fuse it together, then the burden that any one ship has to carry is reduced.

Mr. O'ROURKE. It could also enhance the operational flexibility of the cruisers by allowing you to put them in a location that might be better in certain other ways for performing the ship's mission because it didn't have to necessarily be in some other location as it might have to be if it were really carrying the full burden of collecting the radar data.

Mr. LANGEVIN. Very good.

There have recently been—this is on another topic—there have recently been comments from the Under Secretary of the Navy and other press reports indicate the Navy may be unable to achieve a sustained two-a-year production, two-a-year construction of the *Virginia*-class submarines starting in 2011 due to cost pressures. I guess I would ask you, do you agree with that?

And, also, what are the implications for the Navy's ability to meet combatant commanders' requests should the Navy not fulfill its two-per-year schedule? And what are the cost implications to this program as well as other shipbuilding programs for failing to increase production of the *Virginia*-class submarine to two per year in 2011?

Dr. LABS. Mr. Langevin, there are several implications of that. The press reports that we have seen so far indicate that the Navy did get a submarine put back in 2015. So that draft plan that they are looking at would have two per year, at least from 2011 to 2015. Now, beyond that, that would be a different story.

The question of whether the—the cost implications if they don't achieve two a year is going to have—there are going to be several effects. The first effect would be that if you go back to having to build one submarine a year, that individual submarine is going to be a lot more expensive. It will increase the cost by on the orders of hundreds of millions of dollars.

It will have a second effect of it will increase the costs of the nuclear-powered aircraft carriers that are being built at Newport News. Already the re-centering of the carrier program that was announced by Secretary Gates last spring to 5-year centers adds a little cost to the submarines, on the order of $20 million to $50 million, according to the Navy. So, presumably, going back to one per year after 2015 is going to increase cost not only on the subs but also on the aircraft carriers as well.

Dr. THOMPSON. If we were to build any fewer *Virginia*-class than two per year between now and 2025, then we would be looking at a force of less than 43 at the low point in 2028. Our warfighting requirement is for 48.

Now, we can fill that gap in a variety of ways. I mean, they already have found some workarounds, like, for example, compressing the construction time so that they cannot go any lower. But every boat you take out of the sequence between now and 2025, any less than two per year and you go down to 42 and to 41, and you just can't cover the world. You have to decide someplace that is not going to be covered today.

Mr. O'ROURKE. Just very quickly, in terms of the cost impact, it is worth remembering that when the Navy was working toward the goal of getting the procurement costs of the *Virginia* class down to $2 billion each in 2005 dollars, that they had to take about $400 million out of the cost of the ship to do that. About half of that im-

provement, about $200 million, was achieved simply by going from one boat per year to two.

So if you were to go from two boats per year back to one, you would expect that the cost of the ships would increase by roughly that same amount. So we are looking at something in the range of a $200 million increase in unit procurement cost in 2005 dollars, which would be higher in today's dollars, should you go back down to one per year.

In terms of the vulnerability of the procurement profile to being reduced to less than two per year, there are really three periods in question. One is between now and fiscal year 2013. And it seems to me that it is unlikely that you would fall off two per year between now and fiscal year 2013 because those boats are covered under a multiyear procurement plan, and dropping below two per year in that period would entail breaking that multiyear contract, which has a very significant termination liability attached to it.

The second period is 2014 through 2018, when you are no longer under the current multiyear contract that calls for two per year. And I think during that period there is a fair amount of vulnerability for DOD or the Navy to look at taking a boat out every once in a while and dropping to something less than a solid two per year.

And then an even higher period of vulnerability starts in fiscal year 2019, when we start building the new SSBN, because then at that point you run into this issue of the SSBN putting, potentially, very much pressure on the remainder of the shipbuilding budget, including the attack submarines.

Mr. LANGEVIN. Mr. Chairman, could I ask for clarification on one thing? I know my time——

Mr. TAYLOR. Sure.

Mr. LANGEVIN. The *Ohio* Replacement Program, if I could, on cost, you—at least, Dr. Thompson, you said it is expected that they would run about $7 billion a copy and $85 billion for the fleet of *Ohio* replacements.

Can you talk about how that figure was arrived at? Was that based on paying for it individually, one at a time, or was that assuming a bulk buy, if you would, of the *Ohio* replacements?

Dr. THOMPSON. Dr. Labs and Mr. O'Rourke both cited similar numbers, $6 billion to $7 billion per ship, in their prepared statements. The Navy's actual internal estimate is $15 billion for R&D, $10 billion for the lead ship, and then $5 billion for each ship thereafter.

Dr. LABS. Mr. Langevin, the $7 billion figure and the $85 billion was in my prepared statement as a CBO estimate. We determined that by not using a bulk buy or a multiyear procurement process, but we did give them the benefits of, in effect, a rate effect of assuming that at least one attack submarine was being built in the yard or under a teaming arrangement, like we are building attack submarines today, each year that a new boomer was being built.

And then the estimates were based on adjustments for inflation in terms of the time period that we are building it based on *Virginia*-class analogies adjusted for a larger-class submarine, a larger weight.

Mr. LANGEVIN. And if it were a multiyear procurement buy, would that number come down significantly?

Dr. LABS. I would have to go back and sort of, take a look at that in comparison to what has happened with *Virginia* class. There would certainly be some degree of savings in that, but I couldn't tell you off the top of my head how much that would be.

Mr. LANGEVIN. Could you do that and get back to the committee?

Dr. LABS. Sure.

Mr. O'ROURKE. Just as a quick addendum to what Dr. Labs has testified, the SSBN(X) would not be, under current law, eligible for a multiyear procurement through the first few ships in the program, because you need to establish design stability as a statutory requirement for qualifying for multiyear procurement (MYP).

But for the first few ships in the program, you could use a block buy, as was done for the first few ships in the *Virginia* class. And the savings on the *Virginia*-class block buy were in the range of about five percent. If it was an augmented block buy that also had Economic Order Quantity (EOQ) authority, which was not the case in the *Virginia* block buy, it could be something north of 5 percent. Later on in the program, when you get into a real multiyear procurement thing the savings might be more, closer to 10 percent.

Mr. LANGEVIN. Thank you, Mr. Chairman. I yield back.

Mr. ORTIZ [presiding]. Ms. Pingree.

Ms. PINGREE. Thank you, Mr. Chair.

And thank you for your testimony today. It has been very enlightening to me. As a freshman Member, I always have a lot to learn, and I appreciate all of your perspective on this.

I just have one question, again, kind of a procurement question. We have been talking a lot about the dependence on the DDG–51s. And I will start with Mr. O'Rourke, but if anybody else has a comment, I am interested to learn.

You have said in recent years that the Navy, particularly with this increased dependence, needs to procure at least three DDG–51s per year in order to match and meet the required force structure levels. In the past, you have based this assessment on historical data detailing the useful service life of major surface combatants and the minimum level of investment needed to maintain the Nation's surface combatant industrial base.

Several Navy reports on industrial base have also noted that, in order to maintain two major surface combatant shipyards, a minimum of three DDG–51s must be procured each year, along with additional work in the yards.

So my question, and particularly given that I have one of those yards in my district and we are interested in industrial capacity, and I know that is something that is important to the Chair, as well: If the DDG–51 procurement rate going forward is below three ships a year, what impact will that have on the Navy's ability to sustain a major surface combatant force and maintain a strong industrial base?

I know we have talked around this a little bit, but I just, kind of, want to go over this again to talk about these specific numbers.

Mr. O'ROURKE. All right. The rate that is reportedly in the plan is one and a half ships per year.

Ms. PINGREE. That is what we understand.

Mr. O'ROURKE. And at least half of that, if not more than half of that, would need to go to Bath Iron Works if Bath were to operate at a level commensurate with what it has had in recent years.

In terms of the impact on the industrial base generally, which includes both Bath and the Ingalls yard down on the Gulf Coast, the impact would depend also on how much amphibious shipbuilding there is, because that is work that would add to the workload, especially down at the Gulf Coast yards. And this plan does not have very many amphibious ships in it.

And that is one reason why I tried to signal that in the five-year plan there is an issue with the amount of surface ship work. And, in particular, in the five-year plan, it relates to the amphibious ships in the Gulf Coast yards. But in the 30-year plan, it also relates to the scenario that happens if the Navy has to pay for the SSBNs out of hide. Because that drives down many of the other shipbuilding programs into one-per-year rates. In fact, as I have said at times in the past, it turns the Navy's plan into a digital shipbuilding program; it has nothing but ones and zeros in it.

And that rate is sustained in that scenario for a long enough period of time that I think that would make a consolidation of some kind of the surface ship industrial base a distinct possibility, if not a likelihood.

Ms. PINGREE. Uh-huh. Which is certainly a reduction in our industrial capacity.

Mr. O'ROURKE. Yes.

Dr. LABS. The alternative to that, if it does not—and I would agree with Mr. O'Rourke. I think a long run where you are building one DDG–51 equivalent per year would lead to some kind of consolidation. But if it didn't, it would certainly lead to a much higher unit cost for those ships because you are paying for a lot more overhead on one ship as opposed to spreading it over a number of ships.

Dr. THOMPSON. Well, if we knew 10 years ago what we know now, we wouldn't have built any DDG–1000s and we would have built three or four DDG–51s in various upgraded variants instead. And we would be doing it now and well into the future.

Bath is not going to suffer. If the Navy had its way, it would send all the surface combatants to Bath. But in the current——

Ms. PINGREE. We appreciate you saying that.

Dr. THOMPSON. Oh, well, that is what the Navy tells me.

Ms. PINGREE. I am sure the Chair would differ, but I appreciate it.

Dr. THOMPSON. But, however——

Mr. TAYLOR [presiding]. Whoa, whoa, whoa. Mr. Thompson, I am sorry, you are just way out of line.

Dr. THOMPSON. I am merely characterizing——

Ms. PINGREE. We know Secretary Mabus would never let that happen.

Dr. THOMPSON. As a matter of fact, he has been quite vocal on maintaining the industrial base, so you are right about that.

But I think, as a practical matter, Bath probably is not looking at any serious shortfall in workload going forward, given the fact that it has all of the *Zumwalt* class and will get some of the DDG–51s.

Ms. PINGREE. Thank you.

You know, I am going to regret asking a stupid question, but what do you mean when you say "out of hide"?

Mr. O'ROURKE. It means you have to pay for the SSBNs within your budget without an offset——

Ms. PINGREE. Oh, so taking it out of your hide.

Mr. O'ROURKE. Uh-huh.

Ms. PINGREE. Got it.

Mr. O'ROURKE. That you don't get an offsetting increase to your budget to help pay for it, whether that increase is within the shipbuilding account or within a new specialized account elsewhere in the DOD budget, that you have to absorb it along with everything else that you were already planning on doing.

Ms. PINGREE. Got it. Thank you very much.

Thank you, Mr. Chair.

Mr. TAYLOR. The Chair thanks the gentlewoman.

And since we are coming upon the season of Lent, the Chair is going to try to be forgiving to the gentleman from New England for making a very reasonable remark, however inaccurate.

The Chair now recognizes the gentleman from New York, Mr. Massa.

Mr. MASSA. Thank you, sir.

I was interested to just hear the statement, "If we knew 10 years ago what we know now, we probably would have not purchased any DDG–1000s." And, for the record, at least one member of this committee did, in fact, know 10 years ago what we know now and, in other capacities, was incredibly verbal in opposition to that ship class, an opposition I continue to be verbal on.

We built the two command ships based on a previous generation of amphibious hulls. Is it outside the box, Mr. O'Rourke, to consider using LPD–17 platform to replace those two command ships?

Mr. O'ROURKE. It is not outside the box at all. In fact, there have been multiple press articles over the last year or two about how the Navy is considering, or was at least at one point considering, using either the LPD–17 hull or the T–AKE (Auxiliary Cargo (K) and Ammunition (E) Ship) hull as the basis for a new command ship.

I think if you have a command ship in the program, that would continue to be the Navy's going-in way of looking at the issue. But it appears now that, under fiscal pressures, that the command ship has dropped out of the Navy's program entirely, in which case the question doesn't arise anymore.

Mr. MASSA. And your estimate on the remaining hull life on the two command ships, Mount Whitney and Blue Ridge, that we currently have?

Mr. O'ROURKE. I would have to see when they were commissioned. I actually haven't looked at that lately. But they are not young.

Mr. MASSA. Commensurate with my birth. So you are correct.

Dr. Labs, we have had a lot of conversation today about ballistic missile defense and a fundamental re-shift in national strategy that has a tremendous impact on the U.S. Navy fleet. We have also talked a lot about in-hide/out-of-hide for SSBNs. Is it not true that ballistic missile defense is a national defense priority and not a naval defense priority?

Dr. LABS. I think it is reasonable to characterize ballistic missile defense that way. And, certainly, many observers, you know, do so.

Mr. MASSA. Since the construction of all land-based and aerial activities associated with ballistic missile defense did not come out of those services' hides, is it not, therefore, at least argumentative that we should examine other funding streams for this series of constructions of enhanced *Burke*-class destroyers as we are discussing enhanced funding streams for strategic ballistic defense submarines?

Dr. LABS. I would certainly agree that it is reasonable to look at alternative funding streams for that purpose.

Mr. MASSA. So you wouldn't consider that to be an irrational consideration?

Dr. LABS. No, sir, I would not consider that to be an irrational consideration.

Mr. MASSA. All right. Thank you.

To my good friend with regional concerns from New England, you obviously are very, very focused on and very knowledgeable about submarine fleets, and I welcome that.

What is your vision of what we are going to do to replace the three that I know of, and perhaps more, special mission submarines that are currently extant in the force? Have you heard or seen, has anyone discussed, are we are going to go do that with serial productions with enhanced hulls that we are going to take out of the current, or is Carter and her fellow hulls going to just live forever?

Dr. THOMPSON. Well, in the case of the *Seawolf* class, this is sort of a nightmare to maintain, because it is a unique class of three ships, and doing spare parts and sustainment is very expensive.

Over the long term, the logical solution would be to build a variant of the *Virginia* class. I fully expect *Virginia* class to go beyond 40 ships anyway, so that would be the logical way to go. Given the other constraints, particularly in the undersea ship construction part of the SCN budget, I don't think we could really afford any alternative to that.

Mr. MASSA. Is it out of the box to consider that perhaps the three one-of-a-kind *Carter*-class submarines can act as escorts for the three one-of-a-kind *Zumwalt*-class DDG–1000 surface combatants?

Dr. THOMPSON. Could you say that again?

Mr. MASSA. Since we are into building three of a kind, the *Carter* class and the *Zumwalts*, for which nobody knows what we are going to do with those anyway, perhaps there is some synergy in combining those two shipbuilding programs that I would consider to be somewhat less than successful.

But one last specific question as far as submarines go. We haven't discussed at all today surface infrastructure—in other words, bases, where we are going to put everything. Obviously, the Navy is operating under some incredible fiscal constraints, and that is only going to get worse.

In a perfect world, it would be nice to park a nuclear aircraft carrier anywhere. In a non-perfect world, does it make sense to spend almost as much money on creating a new nuclear-capable homeport as it does building a nuclear-capable ship?

Dr. THOMPSON. I might be able to make the strategic case for Guam but not for Florida.

Mr. MASSA. So you would, from your expert opinion, question the allocation of significant dollar bills into nuclearizing, for lack of a better word, all of the infrastructure necessary in a northern Florida port, specifically in Mayport?

Dr. THOMPSON. I wouldn't question it. It is a waste of money. I already know the answer: It is a waste of money.

Mr. MASSA. So that is relatively frank speaking in a building that is not used to relatively frank speaking.

Dr. THOMPSON. You know, we are spending $4 billion a day in this government that we do not have. And, meanwhile, our share of global GDP has fallen from 32 percent to 24 percent in one decade. So, to spend that kind of money to get no additional gain in terms of military capability is bordering on the scandalous.

Mr. MASSA. Mr. O'Rourke, you and I have had a relationship that spans now more than a decade, and we have engaged in tabletop intellectual conversations about the Navy for some time. And yet here we are with three DDG–1000s of which will have no general ship fleet purpose and some 52 LCSs that will need to be refueled every 48 hours if they operate at any operation tempo (OPTEMPO) necessary.

Is there anything at all in the budget with respect to looking at things like tankers?

Mr. O'ROURKE. You mean tanker ships as opposed to——

Mr. MASSA. Well, unless someone has figured out a way of aerial refueling the LCSs.

Mr. O'ROURKE. You mean oilers.

Mr. MASSA. Thank you.

Mr. O'ROURKE. The Navy does have a downstream plan to replace the current oiler fleet. And reportedly in the press reports that came out last year, the Navy for a time was looking at bringing forward the start of the new oiler program and combining it with what had been the MLP program into some kind of combined TAO–MLP.

In the most recent reporting about the Navy shipbuilding plan, that idea has once again been set aside. And the Navy is proposing to build a reduced-cost Mobile Landing Platform (MLP), and the TAO is now once again out beyond the end of the FYDP.

Mr. MASSA. Thank you very much, gentlemen. I always appreciate your insights and inputs.

And, Mr. Chairman, that calls it for the day.

Mr. TAYLOR. The Chair recognizes the gentleman from Virginia, Mr. Forbes.

Mr. FORBES. Mr. Chairman, I don't have any additional questions.

I just want to thank each of you gentlemen for being here. We appreciate your expertise and your willingness to share that with us.

Mr. Chairman, I yield back.

Mr. TAYLOR. Thank you.

Gentlemen, I guess my parting thoughts would be—and I want to thank all of you for being here.

Mr. Thompson, I am going to try to forget that incredibly inappropriate remark.

But the biggest concern is—and I have also been very fortunate to know Mr. O'Rourke for a while. You know, for at least 10 years, Chiefs of Naval Operations (CNOs) have come before this committee saying the ideal fleet is 313 ships. And under both Democratic and Republican Administrations, what they say they need and what the Administration asks for have never matched up. Not one President that I have served with has asked for a minimum of 10 ships. And given the 30-year expected life, 10 times 30 gets you to that 300-plus-ship Navy.

Having seen the disconnect between what the Navy says they want and what the Administrations, be it the Democrats or Republicans, ask for, I have some very serious concerns that the President's plan to put our Nation's missile defense on ships is not going to be followed up with the proper budget request.

And I realize we don't live in an ideal world. I realize that no one could have envisioned six, seven years ago that we would spend $24 billion on mine-resistant vehicles. On the flip side, I think every penny of that was worthwhile because kids are coming home alive that would have died needlessly, lost their limbs needlessly. So we recognized the vulnerability, I regret to say, too late, but we did recognize that vulnerability. We took the steps to keep people from dying needlessly. And those vehicles that worked well in Iraq are now being retrofitted and on their way to Afghanistan.

So that is $24 billion that will not be available. I am also aware that, depending on who you ask, $12 billion to $14 billion a month is being spent on those two conflicts. Again, when I got here in 1989, I don't think too many people saw us in a land war in Iraq and Afghanistan. Those things happened.

So, given the realities of the world, but also given, as Mr. Thompson pointed out, things we don't expect to happen do happen, and we don't have the luxury of saying, "Gee, we didn't see it coming," particularly if it is a nuclear missile attack coming from someone we didn't expect any time we didn't expect against our Nation, what should we be spending this year to start putting that nuclear defense from the sea into place?

I realize I have just laid out the realities of the world, but what should we be spending, starting this year, to make the plan that the President announced work?

And, by the way, since all of you have spoken very freely, if you don't think we ought to be putting our Nation's missile defense on ships, say so now.

Dr. THOMPSON. Virtually any attack on the United States is going to come over an ocean. And that means having the deployability, the flexibility of putting the defenses at sea, at least one of the layers, makes a lot of sense strategically and operationally.

We are not going to get much mileage out of the *Zumwalt* class. So I think we have to move on to thinking about, well, how many DDG–51s do we need? At the very least, we should be building three a year in the upgraded configuration, maybe four. But I am not sure, as you pointed out in your own remarks, that the Administration has thought this all the way through yet.

Mr. TAYLOR. Dr. Labs.

Dr. LABS. Mr. Chairman, as you know, as a CBO analyst I am not in a position to make policy recommendations. But that being said, if you are——

Mr. TAYLOR. But, Dr. Labs, I think you are off the hook because we asked your opinion.

Dr. LABS. Thank you, Mr. Chairman. My performance review is coming up in two weeks. I am not sure——

Mr. TAYLOR. I would remind the gentleman that no money may be drawn from the Treasury except by an appropriation by Congress.

Dr. LABS. Thank you, Mr. Chairman.

If you decide that you want three ballistic missile stations in Europe at sea and you want to maintain and you want to populate those stations more or less on a continuous basis or something close to it, then you are going to need in the neighborhood of what we were talking about, the three to five ships per station.

So, depending on how fast you want to get there, you would need to start adding ships into your shipbuilding plan pretty much as soon as the acquisition system can accommodate them. Meaning that, if you add money this year, you may not be able to buy the ship immediately, but maybe you can; it kind of depends on what the capacity is that the Navy currently has available to add ships to the program.

Mr. TAYLOR. So, in specific numbers—and, again, I realize we are not living in an ideal word—in specific numbers, how many ships should we be asking for this year for that purpose?

Dr. LABS. Well, given that the Navy is already planning—has already got the *Zumwalt*s being built at Bath, are planning to request for one DDG–51 this year, certainly doubling that procurement rate would be the first logical step that I would take if you were trying to achieve that level of capacity, you know, say, by about 2018 or so.

Mr. TAYLOR. Mr. O'Rourke.

Mr. O'ROURKE. I am under the same strictures that Eric is about making policy recommendations. But if the issue is trying to meet the near-term pressure for BMD capability in Europe, then the steps that you might want to look at, in terms of their ability to produce capability in the shorter run, there are two. And one of those would be to fund the modernization of existing 51s at whatever maximum capacity——

Mr. TAYLOR. You had given us the amount of, what, $54 million? Is that what you said, sir?

Mr. O'ROURKE. I think it is $40 million to $45 million, the last time the Navy asked.

Mr. TAYLOR. Okay. And are you pretty confident of that number, since we don't have a very good track record of coming in under budget?

Mr. O'ROURKE. That answer is several months old, so it is a little bit higher. But the Navy has already had some experience in doing this, so I think there is less risk in that number than there would be in building a lead ship, for example.

Mr. TAYLOR. Okay.

Mr. O'ROURKE. So it may be something higher than $40 million to $45 million.

But if you are trying to find ways to generate BMD capability in the short run to meet a demand that has appeared for BMD capability as a result of the Administration's new plan, then one option would be to look at funding the conversions of existing 51s into a BMD configuration at whatever annual rate both funding and industrial capacity could support.

And the other would be to put additional money into the procurement of SM–3 missiles. Because the inventory of those is fairly low, and once you put money into that, those missiles will appear two to three years later.

If you want to solve a longer-term problem about having BMD capability, then that is what construction of new ships can handle. But construction of new ships, putting that into the budget now will not produce a new ship until about five years from now. If what you are really concerned about handling first is this near-term problem, then it is conversions and procurement of SM–3 missiles that are the options that could address such a concern within that time frame.

Dr. THOMPSON. If I could just reiterate something I said earlier, if we just modernize at the current standard, it won't do us much good in terms of defending the United States or other countries that are being attacked by intermediate- or long-range missiles. Because the standard that we are modernizing to right now is for short- or medium-range missiles with relatively simple warheads—in other words, the sort of thing that Iran might do in its first generation of offensive weapons.

If we want to defend the United States or, say, Japan against a longer-range missile, then we are talking about step three or step four of the plan that the Administration announced in September, rather than step one, which is what we are doing now.

Mr. TAYLOR. For the panel, what is your understanding on the modification of an existing DDG–51 to a theater missile defense configuration? What is the timeline on that, best-case scenario, worst-case scenario?

Mr. O'ROURKE. My understanding is that is being done now as a part of the general modernizations of the existing 51s. And those modernizations are, the last time I checked, being accomplished through a two-part plan of roughly 12 months' duration between the two parts, where the ship comes in and has some hull, mechanical and electrical (HM&E) upgrades for roughly 6 months and then comes in at a later point for combat system upgrades, again another 6 months or so. And, presumably, the BMD work would be done principally during the second of those two modernization periods.

And so, after about 12 months of work, which would take more than 12 months to accomplish because of the time in between those two periods, at the end of that process you now have a DDG–51 that is modernized in various ways, including the addition of a BMD capability.

Mr. TAYLOR. Thank you.

Are there additional questions for the panel?

Mr. FORBES. Mr. Chairman, the only thing——

Mr. TAYLOR. Mr. Forbes.

Mr. FORBES [continuing]. I would like to comment on is that your remarks about Mr. Thompson's statement about Bath may have been a little bit off, but he was right on the money on Mayport. And so we want to make sure that we get that down for the record.

Mr. TAYLOR. So noted.

Mr. Coffman.

Mr. COFFMAN. No.

Mr. TAYLOR. Ms. Pingree.

Mr. Massa.

Ms. Pingree, I would remind you that I really wasn't a proponent of that third 1000, so we—but anyway.

Ms. PINGREE. I appreciate that, sir.

Mr. TAYLOR. But, again, we thank you very, very much. I think we all think this hearing could have been much, much better had the Navy been here today, but I think you gentlemen did a fine job. Thank you.

We stand adjourned.

[Whereupon, at 4:59 p.m., the subcommittee was adjourned.]

A P P E N D I X

JANUARY 20, 2010

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

JANUARY 20, 2010

Opening Statement of Congressman Gene Taylor
Chairman, Subcommittee on Seapower and Expeditionary Forces
January 20, 2010
Issues Affecting Navy Force Structure

Good morning and welcome to the first of many hearings which this subcommittee will undertake on issues affecting the Navy and the Marine Corps. Today's hearing is in advance of the budget submission which is due to arrive to Congress on the 1st of February. There is a reason we are meeting prior to that date; I do not intend for this subcommittee to ever be a "rubber stamp" of the Department's request no matter which political party occupies the White House. As long as I have the honor to be the chairman of this subcommittee, it is my intention to insure that the American people have the right to witness these issues debated in open session, and to work with all Members of this subcommittee, to recommend an authorization that ensures our Navy and Marine Corps have the ships, aircraft, and equipment they need to do the job they are asked.

Today is just the first day of the process of arriving at those recommendations. I felt that it was important to start the legislative season with an examination of alternatives of restoring the Navy fleet to the numbers necessary to meet our national security needs. To that end, I have requested our witnesses discuss a wide range of issues affecting Navy force structure, particularly in light of the President's decision in

October that the Navy play a much larger role in theater ballistic missile defense. I personally agree with that decision. Having been around awhile, and witnessing the incredible amount of equipment we left behind in places like Panama, I understand that when we base our forces in a foreign land, we are always just one election away from being asked to leave. The move to a sea based BMD capability makes sense to me. Our Navy does not need permission to operate on the high seas. However, the Navy and this subcommittee need to remember the "Rule of 3's", which is that to always have a unit forward deployed, you typically need 3 such units. In the case of destroyers and cruisers I would think it may be as many as 4 to 1. The operational concept of how the Navy intends to fill this task set out by the President will, I am sure, be the subject of a future hearing, likely in coordination with Chairman Langevin's Strategic Forces subcommittee.

I don't think our Navy is large enough to do the job they are asked to do. But numbers alone are not the answer- which type of ship and in what number is more important than just the quantity. Currently I don't think we match-up well in either total or type of ship quantities.

- There are some who say we don't need our amphibious forces; I disagree. Maneuver from the sea is the only guaranteed access that we can count on; I think we need more, not fewer, amphibs.

- There are those who say we don't need 11 aircraft carriers; I disagree. Those battle groups have done more to maintain the peace in the world for the last 60 years than any other force we maintain. We change that capability at our peril.
- I am convinced we do not have enough fast attack submarines. These boats kept the Soviet Navy in check during the entire cold war and they will keep any other adversary in check as we proceed into this century.
- I am also convinced we do not have enough surface combatants. The evidence is everywhere; we have carriers operating without escort and Amphibs transit in the Strait of Hormuz without an ASW capable ship in company because the escort is off chasing pirates or guarding oil platforms.
- We have a looming need to replace the capability of the Ohio Class strategic missile submarines, but doing so may cripple the Navy shipbuilding budget in the later part of this decade.

In addition to the hard facts of types of ships and numbers of ships, there are other matters that need debate. This Congress was perfectly clear in the fiscal year 2008 National Defense Authorization Act that the next generation of cruiser has a nuclear power system for electrical power generation and propulsion. That action was taken based on a clear and present threat that our access to fuel could be restricted and leave the

fleet without the ability to conduct major combat operations. It appears that the Navy has decided to cancel the cruiser program. I certainly expect the subcommittee will be evaluating that decision as we go forward.

My last major concern is the Ohio submarine replacement. I expect to have a standalone hearing on this issue due to its significant importance to our national security. I want to make sure that we have identified the right ship and the right missile before we make a 40 year commitment to a program.

These are all hard problems to tackle and I look forward to open debate with my colleagues in the coming weeks and months. I am always open to suggestion from the Members of this committee for hearing topics and look forward to their input.

Today we have three very distinguished experts in Navy acquisition and policy:

- Dr. Eric Labs is senior naval analyst at the Congressional Budget Office. His independent cost analysis of ship construction has proven very helpful to this committee over the years.
- Mr. Ron O'Rourke is senior research analyst at the Congressional Research Service and routinely provides the Congress with in-

depth and well researched papers on capability, cost, and options for future procurement.

- Dr. Loren Thompson is the President and Chief Operating Officer a the Lexington Institute. Dr. Thompson has appeared before this committee before and his insight is always helpful.

For full disclosure, the United States Navy was invited to send representatives to testify today. Secretary Mabus had agreed to do so, with the stipulation that the witnesses would not discuss the upcoming budget submission. Subsequently, my understanding is that Secretary Gates denied the Navy permission to testify. While I think we would have had a better hearing with them, I am satisfied that our panel today will have a frank and open discussion on the best way to rebuild our fleet.

Now I would like to call on the gentleman from Missouri, my friend and partner on this subcommittee, the Honorable Todd Akin.

Opening Statement of W. Todd Akin
Ranking Member, Subcommittee on Seapower and Expeditionary Forces
Hearing on Issues Affecting Naval Force Structure, January 20, 2010

Thank you, Mr. Chairman, and welcome to our witnesses. We appreciate your willingness to appear before us today. I hope this will be a useful springboard for this subcommittee as we prepare to consider the President's Fiscal Year 2011 shipbuilding budget request and the results of the quadrennial defense review. Today's hearing gives us the opportunity to frame the various issues our subcommittee must consider, depending on a number of alternative shipbuilding plans that could emerge shortly. I hope our members will use this hearing as a foundation for the rigorous oversight and decision making that will be required in the coming weeks.

I imagine that our witnesses have been somewhat challenged in preparing their testimony today – for we all continue to rely on press accounts and rumor, as we wait for the first Monday in February. In spite of the lack of new information, your preliminary insights are valuable. I, for one, have been troubled by certain reports, such as those indicating the Navy may attempt to eliminate as many as two carrier strike groups. Likewise, indications that the Navy may not ramp production of the VIRGINIA class submarine to a sustained rate of two per year, starting in Fiscal Year 2011, raise concerns about our ability to meet Combatant Commander requirements for submarine presence and may have second or third order effects on the total cost of shipbuilding. There have also been stories in the media about pressures on amphibious lift. In fact, the Commandant recently alluded to the stress placed on the amphibious fleet in all scenarios evaluated during the Quadrennial Defense Review (QDR). We need to ensure that the Navy and the Marine Corps have both the quantity and capability in our battle force ships to fulfill our Maritime Strategy, deter, and win any future conflict in which the United States may be involved.

On the other hand, some of these concerns may be premature. There have also been press accounts indicating that the next shipbuilding plan will establish a 324-ship requirement, that would maintain the current minimum requirement for 11 carriers, 48 attack submarines, and 33 amphibious ships. Nevertheless, I was interested to note, in your prepared testimony, several items worth further consideration by this subcommittee.

For example, Mr. O'Rourke, you indicated that should the Navy be forced to pay for the OHIO class replacement program within its current top line, it could result in significant reductions to other shipbuilding programs. This is no great surprise, but you also note that such reductions could result in a substantial consolidation of the surface ship construction industrial base. Furthermore, Dr. Labs, in your testimony, you point out that sea-based ballistic missile defense, "...could require a substantial commitment of resources. That ... could make it difficult for the Navy to fund other ship programs."

Therefore, whether or not the QDR and the upcoming long-term shipbuilding plan substantially alter the requirements for certain key platforms, the Navy and this committee will have a number of difficult choices to make in the near term. I thank the Chairman for holding this hearing today, so early in the year, to allow us to properly understand these issues.

Thanks again to our witnesses. I look forward to your testimony.

Congressional Budget Office

Testimony

Statement of
Eric J. Labs
Senior Analyst for Naval Forces and Weapons

The Long-Term Outlook for the U.S. Navy's Fleet

before the
Subcommittee on Seapower and Expeditionary Forces
Committee on Armed Services
U.S. House of Representatives

January 20, 2010

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CONGRESSIONAL BUDGET OFFICE
SECOND AND D STREETS, S.W.
WASHINGTON, D.C. 20515

Mr. Chairman, Congressman Akin, and Members of the Subcommittee, I appreciate the opportunity to appear before you today to discuss the challenges that the Navy is facing in its plans for building its future fleet. Specifically, the Subcommittee asked the Congressional Budget Office (CBO) to examine three matters: the Navy's draft shipbuilding plan for fiscal year 2011, the effect that replacing Ohio class submarines with a new class of submarines will have on the Navy's shipbuilding program, and the number of ships that may be needed to support ballistic missile defense from the sea. CBO's analysis of those issues indicates the following:

- If the Navy receives the same amount of money for ship construction in the next 30 years that it has over the past three decades—an average of about $15 billion per year in 2009 dollars—it will not be able to execute its fiscal year 2009 plan to increase the fleet from 287 battle force ships to 313.[1] As a result, the draft 2011 shipbuilding plan drastically reduces the number of ships the Navy would purchase over 30 years, leading to a much smaller fleet than either the one in the 2009 plan or today's fleet.

- The draft 2011 shipbuilding plan increases the Navy's stated requirement for its fleet from 313 ships to 324, but the production schedule in the plan would buy only 222 ships, too few to meet the requirement. The Navy's current 287-ship fleet consists of 239 combat ships and 48 logistics and support ships. The 2009 plan envisioned expanding the fleet to a total of 322 ships by 2038: 268 combat ships and 54 logistics and support ships. In contrast, under the draft 2011 plan, the fleet would decline to a total of 237 ships by 2040: 185 combat ships and 52 logistics and support ships.[2]

- CBO's preliminary estimate is that implementing the draft 2011 shipbuilding plan would cost an average of about $20 billion per year for all activities related to ship construction (including modernizing some current surface combatants and refueling ships' nuclear reactors). A more detailed estimate will follow after the Navy formally submits its final 2011 plan to the Congress in February with the President's budget request.

- Replacing the 14 ballistic missile submarines (SSBNs) of the Ohio class—which are due to start reaching the end of their service lives in the late 2020s—with 12 new SSBNs could cost about $85 billion. If the Navy received that amount in addition to the resources needed to carry out the draft 2011 plan (which includes funding for those new submarines), it could probably purchase the additional ships identified in the "alternative construction plan" that accompanied the draft 2011

1. "Battle force" is the term the Navy uses to describe its fleet, which includes all combat ships (surface combatants, aircraft carriers, submarines, and amphibious ships) as well as many types of logistics and support ships.

2. The Navy's long-term shipbuilding plans typically cover 30 years, so 2038 is the last year of the 2009 plan, and 2040 is the final year of the draft 2011 plan.

plan, because CBO's preliminary estimate of the cost of that alternative plan is an average of about $23 billion per year over 30 years.

- Sea-based ballistic missile defense, a relatively new mission for the Navy, could require a substantial commitment of resources. That commitment could make it difficult for the Navy to fund other ship programs.

Before discussing those issues, however, let me briefly recap CBO's analysis of the 2009 shipbuilding plan as a point of departure for examining the draft 2011 plan.

The Navy's 2009 Shipbuilding Plan and the Effects of Extending Current Funding Levels

For much of the past decade, the Navy spent an average of about $13 billion a year (in 2009 dollars) on shipbuilding: approximately $11 billion to construct new ships and $2 billion to refuel nuclear-powered aircraft carriers and submarines and to modernize surface combatants. In a report to this Subcommittee, CBO estimated that carrying out the Navy's 2009 plan to build and sustain a 313-ship fleet would cost far more than that: a total of about $800 billion (in 2009 dollars) over 30 years—or an average of almost $27 billion a year (see Table 1).[3] Those costs would include the purchase of 296 new ships, nuclear refuelings of aircraft carriers and submarines, and the purchase of mission modules for littoral combat ships (LCSs). New-ship construction alone would cost about $25 billion a year, including new ballistic missile submarines.

The Navy's cost estimate for implementing the 2009 plan was only slightly lower than CBO's projection. The Navy estimated that it would need to spend a total of about $750 billion over the 30-year period of the 2009 plan—or an average of about $25 billion per year for all shipbuilding activities and about $23 billion per year for new-ship construction alone. In contrast to the similarity between CBO's and the Navy's estimates for the 2009 plan, CBO's estimates for the 2007 and 2008 shipbuilding plans were approximately 30 percent to 35 percent higher than the Navy's estimates (which were substantially smaller than the service's estimate for its 2009 plan).[4]

Historical Funding for Ships

Over the past 30 years, the distribution of the Navy's shipbuilding budget among the major categories of ships has been fairly stable. Surface combatants have received about 37 percent of shipbuilding funds; submarines, 30 percent; aircraft carriers, 16 percent; amphibious ships, 10 percent; and logistics and support ships, 7 percent. The 2009 shipbuilding plan envisioned increasing the share of funding devoted to submarine construction from 30 percent to an average of 38 percent over the next 30 years, CBO estimated—largely at the expense of logistics and support ships and

3. For more details, see Congressional Budget Office, *Resource Implications of the Navy's Fiscal Year 2009 Shipbuilding Plan,* attachment to a letter to the Honorable Gene Taylor (June 9, 2008).

4. Ibid., pp. 10–13. The Navy did not release a shipbuilding plan for fiscal year 2010.

Table 1.

Funding for Major Categories of Ships in the Past and Under the Navy's 2009 Plan

	Actual, 1980 to 2009	Navy's 2009 Shipbuilding Plan, 2009 to 2038
	Average Annual Funding (Billions of 2009 dollars)	
Surface Combatants	5.3	9.6
Submarines	4.3	10.0
Aircraft Carriers	2.3	3.7
Amphibious Ships	1.4	2.6
Logistics and Support Ships	1.1	1.1
Total	**14.4**	**26.9** [a]
	Percentage of Total Shipbuilding Budget	
Surface Combatants	37	34
Submarines	30	38
Aircraft Carriers	16	14
Amphibious Ships	10	10
Logistics and Support Ships	7	4
Total	**100**	**100**

Source: Congressional Budget Office.

a. Includes funding to modernize some existing surface combatants, refuel nuclear reactors on aircraft carriers and submarines, and produce mission modules for littoral combat ships.

surface combatants (see Table 1). That projected increase resulted mainly from including the costs of replacing the Navy's SSBNs (which are discussed in more detail later in this testimony). Table 1 illustrates some of the challenges the Navy faces in funding its ship accounts. Average annual spending for surface combatants would have to rise by 80 percent—and spending for submarine construction would need to more than double—for the Navy to buy the major combat ships included in the 2009 plan.

One factor that contributes to the Navy's funding challenges is the historical trend of rising average costs per ship (see Table 2). During the 1980s, the era of the Reagan Administration's military buildup, the Navy paid an average of about $1.2 billion (in 2009 dollars) for a new ship. The new ships in the 2009 plan would cost an average of about $2.5 billion apiece by the Navy's estimate, or $2.7 billion apiece by CBO's estimate. The most recent information on actual ship purchases comes from the 2010 defense appropriation act, which allocates nearly $15 billion to buy seven ships, for an average cost of about $2.1 billion each. That figure is smaller than the estimates of per-ship costs under the 2009 plan because five of the seven ships purchased in the 2010 appropriation act (two LCSs, two T-AKE logistics ships, and one high-speed

Table 2.

Average Ship Costs and Purchases in the Past and Under the Navy's 2009 Plan

	Average Cost per Ship (Billions of 2009 dollars)	Average Number of Ships Purchased per Year
1980s	1.2	17.2
1990s	1.5	7.4
2000s	2.0	6.0
2009 Shipbuilding Plan		
Navy's estimate	2.5	9.9
CBO's estimate	2.7	9.9
Memorandum:		
Steady-State Requirement for a 313-Ship Fleet[a]	n.a.	8.9

Source: Congressional Budget Office.

Note: n.a. = not applicable.

a. Steady state refers to a situation in which the total number of ships remains constant from one year to the next as new ships replace ones that are retired from the fleet.

vessel) are relatively inexpensive, costing no more than about $600 million apiece. The 2010 shipbuilding appropriation illustrates how a fleet composed of less expensive ships could stop the trend of growing average costs per ship, although it could result in a less capable fleet than the more expensive ships in the Navy's 2009 plan.

The rise in average ship costs over time may stem from several factors:

- When the Navy buys a new generation of ships, it improves their capabilities, thus driving up their costs.[5] For example, the Arleigh Burke class destroyer, which was first built in the 1980s, is much more capable—and much more expensive—than the preceding Spruance class destroyer, which was built mainly in the 1970s. Likewise, future versions of the Arleigh Burke class destroyer configured to perform ballistic missile defense are likely to be more costly than existing ships.

- Over the past two decades, increases in labor and materials costs to build naval ships in the United States have outstripped inflation in the economy as a whole.

5. A report by the RAND Corporation supports this idea. It concluded that half of the increase in the cost of Navy ships from the 1960s to the mid-2000s was attributable to inflation in the economy as a whole, and the other half resulted from the Navy's purchase of increasingly capable ships. See Mark V. Arena and others, *Why Has the Cost of Navy Ships Risen? A Macroscopic Examination of the Trends in U.S. Naval Ship Costs Over the Past Several Decades,* MG-484-NAVY (Santa Monica, Calif.: RAND Corporation, 2006).

Specifically, the cost of building ships has been rising about 1.4 percent faster per year than the prices of final goods and services in the U.S. economy (as measured by the gross domestic product deflator).

- As average ship costs have increased, the Navy has bought fewer ships. However, the fixed overhead costs at naval shipyards may not have declined at the same rate. Thus, with fewer ships being purchased, the average amount of fixed overhead costs per ship may have risen.

The numbers in Table 2 illustrate the decline in ship purchases over time. During the 1980s, the Navy bought an average of 17.2 ships per year in pursuit of a 600-ship fleet. By the 2000s, that number had fallen to 6.0 ships a year. To sustain the steady-state fleet of 313 ships envisioned in the 2009 plan, however, the Navy would need to buy 8.9 ships per year, under an assumption that the ships had an average service life of 35 years.[6] (A larger fleet of 324 ships, the reported goal of the draft 2011 plan, would require buying 9.3 ships per year over the long term.) To compensate for earlier years in which the Navy bought fewer than 8.9 ships per year, the 2009 shipbuilding plan would purchase 9.9 ships each year to achieve and maintain a 313-ship fleet.

The Effects of Current Budget Levels on the Future Fleet

Despite the large funding increases that would be necessary to carry out the 2009 plan, senior Navy officials have said in recent months that the service expects to make do with $13 billion to $15 billion per year for its future shipbuilding. In October 2009, the Deputy Assistant Secretary of the Navy for Ship Programs, Allison Stiller, said she thought "$13 billion [per year] is about right."[7] Several weeks later, however, the Under Secretary of the Navy, Robert O. Work, stated, "We think we can do what we need on $15 billion a year."[8] Those funding levels—which represent about 50 percent to 60 percent of the amount required to fund the 2009 shipbuilding plan—are similar to what the Congress has appropriated in recent years. In both 2008 and 2009, the Navy received about $14 billion for ship construction, in each case more than the Administration had requested. For 2010, the President's budget requested $14.9 billion for ship construction, and the Congress appropriated $15.0 billion.

CBO compared the number of ships that could be purchased with annual budgets of either $13 billion ($390 billion over 30 years) or $15 billion ($450 billion over

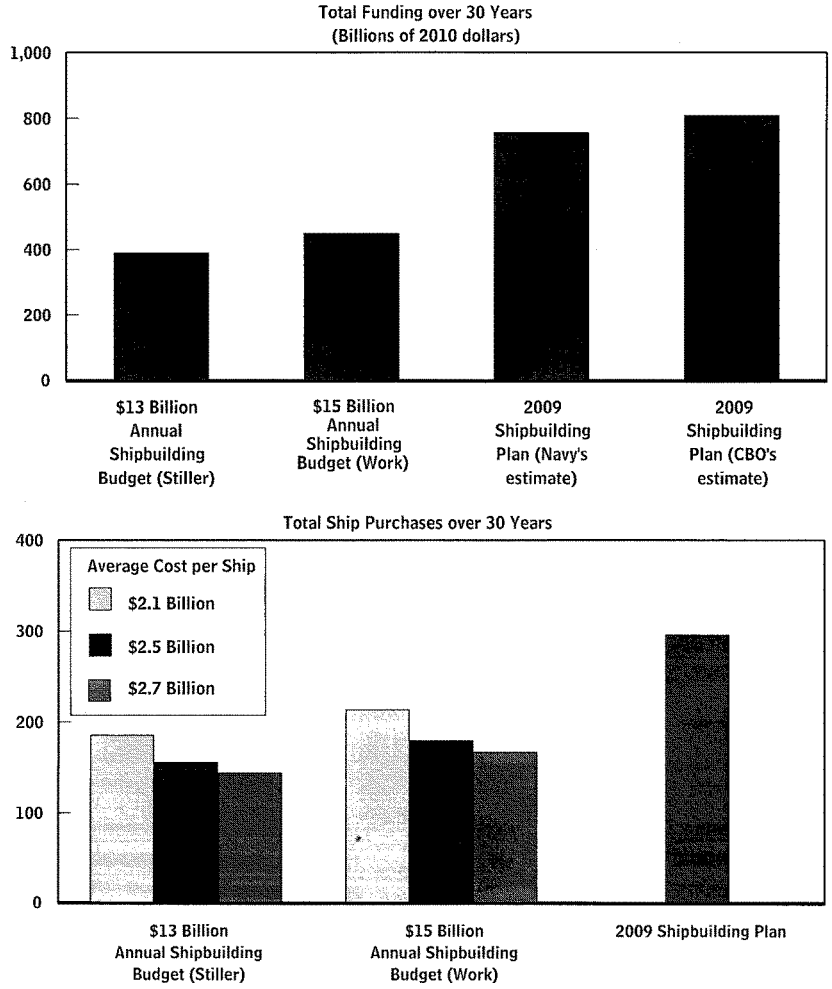
6. Steady state refers to a situation in which the inventory of ships theoretically remains constant from one year to the next as new ships replace ones that are retired from the fleet. The average number of ships that would have to be purchased each year to keep the fleet at a given size indefinitely equals that steady-state force size divided by the stated service life of a ship. Thus, a 313-ship fleet divided by an average service life of 35 yields a requirement to buy 8.9 ships a year.

7. Zachery M. Peterson, "Stiller: $13 Billion for Shipbuilding Per Year 'About Right' for Now," *Inside the Navy* (October 19, 2009).

8. Dan Taylor, "Work: Navy Will Try to Keep Shipbuilding Budget at $15 Billion," *Inside the Navy* (November 2, 2009).

Figure 1.

Total Funding and Ship Purchases Under Various Scenarios



Source: Congressional Budget Office.

Note: "Stiller" refers to the Deputy Assistant Secretary of the Navy for Ship Programs, Allison Stiller, and "Work" refers to the Under Secretary of the Navy, Robert O. Work.

30 years) under three scenarios for average ship costs: $2.1 billion per ship, as in the 2010 defense appropriation; $2.5 billion per ship, as in the Navy's estimate for the 2009 plan; and $2.7 billion per ship, as in CBO's estimate for the 2009 plan.[9] That plan envisioned buying a total of 296 ships over 30 years. Under the constrained budgets, roughly one-half to three-quarters of that number of ships could be purchased, depending on the average cost per ship (see Figure 1). At the bottom end of the range, a $13 billion annual budget would buy 144 ships over 30 years at an average cost of $2.7 billion apiece. At the top end of the range, a $15 billion annual budget would yield 214 new ships over 30 years if their cost averaged $2.1 billion.

The ship purchases under those scenarios would not be large enough to replace all of the Navy's current ships as they reach the end of their service lives in coming years. Consequently, with those annual budget levels and average ship costs, the size of the Navy's fleet would decline over the next three decades from 287 ships to between 170 and 240 ships. Specifically, if Navy ships cost an average of $2.1 billion apiece, the battle force fleet would fall to about 270 ships by 2025 with a $15 billion annual budget or to 250 ships with a $13 billion budget (see Figure 2). However, if the cost per ship averaged $2.7 billion, the fleet would decline to about 230 ships by 2025 under the lower budget level or to about 240 ships under the higher level. By 2038, the last year of the 2009 shipbuilding plan, the effect on the fleet would be more pronounced. The high end of the range (a $15 billion shipbuilding budget and an average cost of $2.1 billion per ship) would be 240 ships, but the low end (a $13 billion budget and $2.7 billion per ship) would yield just 170 ships—60 percent of the size of today's fleet.

The Navy's Draft 2011 Shipbuilding Plan

The Subcommittee asked CBO to analyze the procurement and inventory tables from a draft of the Navy's shipbuilding plan for fiscal year 2011. The six tables, which have not been officially released, were published at InsideDefense.com.[10]

- One table shows an increase in the target size of the battle force fleet from 313 ships to 324. The target for large surface combatants (cruisers and destroyers) has been raised from 88 to 96, and the desired number of support ships has nearly doubled from 20 to 39. Those increases are partly offset by deleting the requirements for future maritime prepositioning ships and guided missile submarines.

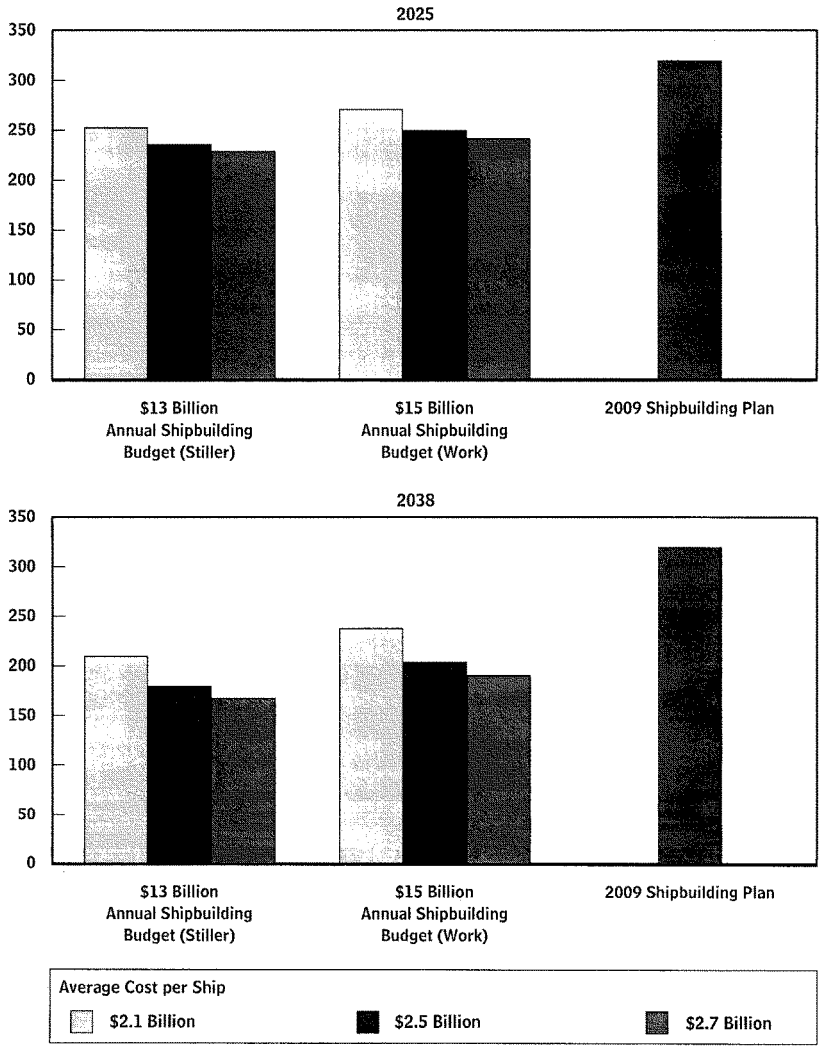
9. For its estimate, CBO divided the total amount of money that it projected would be necessary for all shipbuilding activities in the 2009 plan—new construction, refuelings of nuclear-powered aircraft carriers and submarines, and other (minor) expenditures—by the number of ships purchased under the plan to determine the average cost per ship. That calculation was made to allow comparisons with the notional budget levels of $13 billion and $15 billion, which CBO assumed would also include all shipbuilding activities. If the calculation used funding for new-ship construction alone, the average cost per ship under the 2009 plan would be slightly lower. See Congressional Budget Office, *Resource Implications of the Navy's Fiscal Year 2009 Shipbuilding Plan*, p. 2.

10. See www.insidedefense.com/secure/data_extra/pdf8/dplus2009_3796.pdf.

Figure 2.

Projected Inventory of Navy Ships Under Various Scenarios

(Number of ships)



Source: Congressional Budget Office.

Note: "Stiller" refers to the Deputy Assistant Secretary of the Navy for Ship Programs, Allison Stiller, and "Work" refers to the Under Secretary of the Navy, Robert O. Work.

- Other tables show more details of the draft 2011 plan: construction and funding profiles for Navy ships from 2011 to 2015 and the construction profile and inventory of battle force ships from 2011 to 2040. Those profiles indicate that the Navy envisions buying 222 ships (including 12 SSBNs) in the next 30 years under the draft 2011 plan, compared with 296 ships under the 2009 plan.[11] With those purchases, the size of the battle force fleet would peak at 312 ships in 2021 and then decline steadily to 237 ships by 2040. (In comparison, the 2009 shipbuilding plan envisioned a fleet of 322 ships in 2038, the last year of its projection period.)

- The remaining tables show the construction profile and inventory of battle force ships through 2040 under an "alternative construction plan." That plan assumes that the Navy receives funding to purchase a new class of SSBNs in addition to the full funding needed for the draft 2011 plan. The alternative plan would purchase 278 ships between 2011 and 2040. Again, the battle force fleet would peak at 312 ships in 2021, but thereafter it would decline only to a range of 286 to 291 ships between 2030 and 2040—about the same size as today's fleet.

Most of the cuts under the draft 2011 plan and the alternative construction plan come from the Navy's combat ships: surface combatants, submarines, aircraft carriers, and amphibious ships. Under the 2009 shipbuilding plan, the Navy would have purchased 245 combat ships. That number falls by 32 percent (to 166) in the draft 2011 plan and by 16 percent (to 207) in the alternative plan (see Table 3). Thus, by 2038, the draft plan would produce a fleet of 189 combat ships, compared with 239 today or 268 under the 2009 plan. The alternative construction plan would yield a fleet of 222 combat ships.

It is not clear from available information what the Navy believes the draft 2011 plan will cost. If the service assumed an average annual shipbuilding budget of $15 billion over the 30-year period of the plan, the 222 ships purchased under the plan would imply an average cost of $2.0 billion per ship. A $13 billion annual shipbuilding budget would imply an average per-ship cost of $1.8 billion. Both of those figures are much smaller than the $2.5 billion per ship implied by the 2009 plan. In the alternative 2011 construction plan, which envisions that the Navy will receive an extra $85 billion to fund its new class of SSBNs, the service buys 56 additional ships. Under that plan, the $15 billion and $13 billion budget levels would imply average per-ship costs of $1.9 billion and $1.7 billion, respectively.

CBO's preliminary assessment of the draft 2011 plan suggests that it would cost considerably more than $15 billion per year to implement. On the basis of the limited

11. According to later press reports, the Navy has added five ships to the 2011 plan: one attack submarine (in 2015), two littoral combat ships (in 2012 and 2013), and two logistics ships (in 2013 and 2015); see Christopher J. Castelli, "Pentagon Restores Submarine, Seabasing in Budget Endgame," *Inside the Pentagon* (January 7, 2010). CBO's analysis does not include those five extra ships, although the testimony that the Congressional Research Service is delivering today does reflect those changes.

Table 3.

Ship Purchases and Inventory Under Various Navy Shipbuilding Plans

	2009 Plan	Draft 2011 Plan	Alternative 2011 Construction Plan[a]
		Total Purchases over 30 Years	
Combat Ships	245	166	207
Logistics and Support Ships	51	56	71
Total	**296**	**222**	**278**
		Inventory[b]	
In 2025			
Combat Ships	266	234	240
Logistics and Support Ships	54	67	67
Total	**320**	**301**	**307**
In 2038[c]			
Combat Ships	268	189	222
Logistics and Support Ships	54	53	66
Total	**322**	**242**	**288**

Source: Congressional Budget Office based on data from the Navy and www.InsideDefense.com.

a. The "alternative construction plan" included in draft Navy documents resembles the draft 2011 plan but with additional resources provided to fund the replacement of the Navy's ballistic missile submarines; the costs of that replacement could otherwise displace some ships from the construction plan.

b. The Navy currently has 239 combat ships and 48 logistics and support ships, for a total fleet of 287 ships.

c. Because the Navy's long-term shipbuilding plans typically cover 30 years, 2038 is the final year of the 2009 plan. (The 2011 plans run through 2040.)

information available in the press, CBO estimates that carrying out all of the shipbuilding activities in the draft plan would cost an average of about $20 billion a year (in 2010 dollars) between 2011 and 2040. The alternative 2011 construction plan would cost an average of about $23 billion per year. Those estimates may change depending on the details that are in the official 2011 plan when the Navy submits it next month.

One notable feature of the draft plan is that the Navy appears to be budgeting amounts for the littoral combat ship that would greatly exceed the Congressionally mandated cost cap for those ships. The cap, which is adjusted each year for inflation, is currently $480 million per vessel (excluding outfitting costs, postdelivery costs, and costs for the mission modules that LCSs will carry). According to the draft tables available for the 2011 plan, the Navy hopes to buy two LCSs in 2011 for a total of

$1.2 billion, another two in 2012 for $1.2 billion, three in 2013 for $1.8 billion, four in 2014 for $2.6 billion, and four more in 2015 for $2.6 billion (all in then-year dollars). Thus, the total amount budgeted for those 15 LCSs between 2011 and 2015 is $9.4 billion, whereas the adjusted cost cap would permit no more than $7.8 billion.

The Cost of Replacing Ohio Class Ballistic Missile Submarines

The Navy's Ohio class submarines, which carry Trident ballistic missiles, are the sea-based leg of the U.S. strategic triad for delivering nuclear weapons.[12] Those submarines will start to reach the end of their service lives in the late 2020s. Under the draft 2011 plan, replacing the Ohio class SSBNs would consume a significant share of the resources devoted to ship construction over the next 30 years. The Navy's 2009 plan included a requirement for a fleet of 14 SSBNs, but it envisioned buying only 12 of those submarines, two fewer than in the 2007 and 2008 shipbuilding plans. The tables available for the draft 2011 plan suggest that the Navy has reduced its requirement for SSBNs to 12 and that it intends to buy that number of replacements for the Ohio class submarines over the next three decades.

The Navy's Estimates

The design, cost, and capabilities of that replacement class—currently called the SSBN(X)—are among the most significant uncertainties in the Navy's and CBO's analyses. The Navy's 2007 and 2008 shipbuilding plans assumed that the first SSBN(X) would cost $4.3 billion and that subsequent ships in the class would cost about $3.3 billion each, implying an average cost of about $3.4 billion per submarine. The 2009 plan explicitly excluded the costs of the SSBN(X), although it included 12 of the submarines in its projection of future inventories.

Press reports now indicate that the Navy expects a class of 12 SSBN(X)s to cost a total of about $80 billion, an amount that the Navy said it determined by inflating the cost of the original Ohio class to today's dollars. That total implies an average cost of about $6.7 billion per submarine.[13] The first SSBN(X) would be authorized in 2019 (although advance procurement money would be needed in 2017 and 2018 for long-lead items such as the ship's nuclear reactor). The second submarine would be purchased in 2022, followed by one per year from 2024 to 2033.

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12. The other two legs are land-based intercontinental missiles and manned strategic bombers.

13. Christopher J. Castelli, "Navy Confronts $80 Billion Cost of New Ballistic Missile Submarines (Updated)," *Inside the Pentagon* (December 3, 2009). Later in that article, the average cost of a new SSBN is said to be $6 billion to $7 billion, implying a total cost of $72 billion to $84 billion for the entire class.

CBO's Estimates

Many Navy and industry officials involved with submarine warfare or construction expect that an SSBN(X) would be substantially smaller than an Ohio class submarine. However, that does not necessarily mean it would be cheaper to build, even with the effects of inflation removed.

Since 1991, when the last Ohio class submarine was authorized, the submarine industry has improved its design and construction processes. Both General Dynamics's Electric Boat shipyard and Northrup Grumman's Newport News shipyard use more-modern construction techniques and have become more efficient. Those changes suggest that using the Ohio class as an analogy to estimate the future costs of the SSBN(X) could overstate costs.

At the same time, however, the factors described above that have caused average ship costs to grow over time also apply to submarines. Growth in labor and materials costs in the submarine construction industry has outstripped general inflation. In addition, the capabilities of the Navy's submarines have improved over the years, making them more expensive to produce. Finally, Ohio class submarines were built at a time when the Navy was constructing many more warships (including aircraft carriers at Newport News and submarines at both shipyards) than it is today, which suggests that those earlier submarines benefitted from having fixed overhead costs spread over more ships.

The growth in submarine costs over time can be seen by comparing the cost per thousand tons of the lead ship of U.S. submarine classes produced in the past 40 years (see Figure 3). In the 1970s, the Navy built the first Los Angeles class attack submarine and the first Ohio class ballistic missile submarine for about $350 million to $400 million per thousand tons of Condition A weight (a term analogous to lightship displacement on surface ships, which is the weight of the ship excluding fuel, ammunition, crew, and stores). By the late 1980s and 1990s, the cost of the lead ships of the Seawolf and Virginia classes of attack submarines had more than doubled to $825 million to $850 million per thousand tons.[14]

In most of its recent naval analyses, CBO has assumed that the SSBN(X) would carry 16 missile tubes instead of the 24 on existing submarines and would displace around 15,000 tons submerged—making it roughly twice as big as a Virginia class attack submarine but nearly 4,000 tons smaller than an Ohio class SSBN. On the basis of that assumed size—as well as the amount the Navy is currently paying for a Virginia class submarine and historical cost growth in shipbuilding programs—CBO estimates that 12 SSBN(X)s would cost an average of $7.0 billion each (in 2010 dollars). The lead ship of the class could cost about $11 billion (including some nonrecurring items) when ordered in 2019. In all, CBO expects a class of 12 SSBN(X)s to cost a total of about $85 billion.

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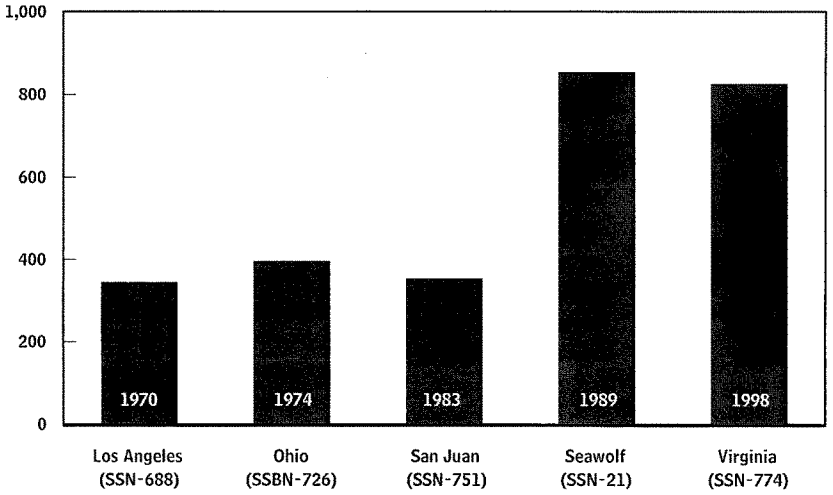
14. At around 9,100 tons submerged, a Seawolf class submarine is about 20 percent larger than a Virginia class submarine but only half the size of an Ohio class SSBN.

Figure 3.

Cost per Thousand Tons for the Lead Ship of Various Classes of Submarines

(Millions of 2010 dollars)



Source: Congressional Budget Office based on data from the Navy.

The figures that the Navy is using now for the SSBN(X), as reported in the press, appear to align more closely with CBO's estimates of the past three years than with the estimate that the Navy used in formulating its 2007 and 2008 shipbuilding plans. CBO's estimate of $7.0 billion per submarine is slightly larger than the reported Navy figure of about $6.7 billion, which is twice the $3.4 billion average cost that the Navy assumed for the SSBN(X) in its 2007 and 2008 shipbuilding plans.

Ballistic missile submarines are more capable of surviving attacks than the other legs of the U.S. strategic triad, and they carry about half of the nation's deployed nuclear warheads. Given that role, policymakers may regard replacing the Ohio class when it retires as the most critical part of the Navy's shipbuilding plan. If those SSBNs were going to be replaced no matter what happened, and if the Navy received enough resources to pay for them above and beyond what it might otherwise expect to allocate to shipbuilding, it could use the additional funding to buy more surface ships and attack submarines. That is the presumed motivation behind the alternative construction plan that accompanied the draft 2011 plan. CBO's estimate of the difference in costs between the draft 2011 plan and the alternative construction plan is $3 billion per year, or a total of about $90 billion (compared with the estimated $85 billion cost of 12 SSBN(X)s). Under the alternative plan, that extra $90 billion would purchase

56 additional ships: 19 large surface combatants, 15 littoral combat ships, 4 attack submarines, 3 amphibious ships, and 15 logistics and support ships.

Surface Combatants Required to Support Ballistic Missile Defense

The Subcommittee asked CBO to evaluate the number of Aegis-capable surface combatants needed to perform the ballistic missile defense (BMD) mission in Europe. The answer could range from 3 to 15 depending on the rotation method the Navy used to provide ships for BMD patrols, which CBO assumed would require continuous coverage of the patrol areas.[15] The Missile Defense Agency (MDA) is also concerned with a broader mission of providing missile defense to parts of the Middle East as well as to Europe, which would require additional patrol areas needing continuous presence by BMD-capable ships. CBO estimated the number of ships required for missile defense—focusing on Europe first—using three possible rotation methods:

- **Traditional Rotation (5:1)**—Under the Navy's current deployment cycle for surface combatants, five ships (based in Norfolk, Va.) are necessary to keep one ship forward deployed in the European theater at all times. That cycle typically keeps ships deployed for six months at a time. After that, they spend 18 to 21months in their home port while their crews rest and train and the ship undergoes maintenance in preparation for the next six-month deployment (although during much of that time, the ship remains in a near-ready state to deploy quickly if necessary).[16] Thus, at any point, roughly three of the five ships in the rotation will be in the early, middle, or late stage of their time in their home port, a fourth ship will be deploying to or from the theater of operations, and the fifth ship will be on-station in the theater.

- **Rotating Crews (3:1)**—In this method, which is similar to what the Navy is planning for littoral combat ships, three or four crews take turns operating three ships, one of which is forward deployed at any given time. Depending on the rotation model, a ship remains overseas longer than six months, and replacement crews are flown to its location in the theater to take over running it, while two other ships remain in their home port in the continental United States for training and maintenance. That rotation method lets ships spend less overall time in transit to and from a theater and more time on-station. (In an experiment called Sea Swap

15. In fact, the requirement for continuous coverage has not yet been established. How much coverage is necessary and how frequently it needs to be in place have not been determined by the Department of Defense.

16. Over the next few years, the Navy may keep BMD-capable ships in their home ports for a much shorter period until more of those ships are available. The Navy is planning to convert most of its 84 Aegis cruisers and destroyers to perform ballistic missile defense, but as of 2010, it has converted or funded only 27 ships. See Ronald O'Rourke, *Sea-Based Ballistic Missile Defense—Background and Issues for Congress* (Congressional Research Service, December 22, 2009).

conducted from 2002 to 2006, the Navy successfully rotated crews to individual destroyers while the ships were deployed overseas.)[17]

- **Home Port in Theater (2:1 or 1:1)**—The Navy could permanently base BMD-capable ships in Europe to provide an immediate response to a crisis or even full-time coverage of BMD patrol areas. The Navy counts ships that are based abroad as providing full-time overseas presence. If the Navy needed to ensure that one ship was always at sea providing ballistic missile defense, then a two-ship rotation might be necessary to compensate for whatever time the first ship spent in its European home port for maintenance or other activities.

MDA has reported that sometime in the near term—the next five to seven years—ships may be stationed at three locations in European waters to provide sea-based ballistic missile defense in that theater against Iranian missile threats.[18] Under the Navy's traditional deployment cycle for surface combatants, a rotation of 15 ships would be needed to provide missile defense in Europe from three stations (see Table 4).

For the broader and more demanding mission, MDA expects to need up to eight sea-based BMD stations in Europe and the Persian Gulf in the near term. For the longer term—10 years and beyond—MDA suggests that with improvements in BMD-related missiles, radars, and sensors, the number of stations at sea could be reduced to five. Under the Navy's traditional deployment cycle, eight stations could require a rotation of 42 ships, whereas five stations could require 26 ships.[19]

The Navy could reduce the number of ships needed to provide full-time BMD presence in Europe by employing alternative crewing schemes or basing ships in the theater. For example, if the Navy used rotating crews along the lines of its Sea Swap experiments or its plan for LCSs, it might need only three ships to keep one operating full time in a designated BMD patrol area. In that case, only 24 ships would be necessary to support eight BMD stations in the near term, or 15 ships to support five

17. For a more detailed discussion of Sea Swap and the benefits of rotating crews to surface combatants to increase the amount of time they can spend forward deployed, see Congressional Budget Office, *Crew Rotation in the Navy: The Long-Term Effect on Forward Presence* (October 2007).

18. CBO used a similar framework in its analysis of ballistic missile defense in Europe. Three ships equipped with Standard Missile-3 Block IIA interceptors (which are currently planned to enter the fleet in about 2018) would provide nearly complete coverage of Europe against Iranian missiles. See Congressional Budget Office, *Options for Deploying Missile Defenses in Europe* (February 2009), pp. 17–22.

19. Because the Persian Gulf takes longer to reach from the United States than Europe does, the Persian Gulf would require a ship-rotation ratio of 6:1 if the ships deployed from Norfolk, Va. (or about 7:1 if they deployed from the U.S. Pacific Fleet). Thus, for eight stations, six ships in the European theater at a ratio of 5:1, plus two ships in the Persian Gulf at a ratio of 6:1, equals 42 ships. For five stations, four ships in the European theater at a ratio of 5:1, plus one in the Persian Gulf at a ratio of 6:1, equals 26 ships.

Table 4.

Number of Ships Needed to Maintain Continuous Presence for Sea-Based Ballistic Missile Defense

	Number of Ballistic Missile Stations		
	Three (Defending only Europe in the near term)	Five (Defending Europe and the Middle East over the long term)	Eight (Defending Europe and the Middle East in the near term)
Traditional Rotation	15	26 [a]	42 [a]
Rotating Crews	9	15	24
Home Port in Theater	3 to 6	5 to 10	8 to 16

Source: Congressional Budget Office.

a. With five stations, one would be in the Persian Gulf, which would require a rotation ratio of 6:1 if the ships deployed from Norfolk, Va. With eight stations, two would be in the Persian Gulf.

stations over the long term. If the BMD requirement was limited to three stations around Europe, then just nine ships with rotating crews would be needed.

The BMD mission may be better suited to the use of rotating crews than traditional missions performed by surface combatants are. A BMD-capable surface combatant dedicated to the single mission of providing missile defense patrols would be analogous to the Navy's SSBNs, which have the single mission of providing deterrent patrols at sea with nuclear missiles. Focusing on a single mission makes it easier for the multiple crews of a single ship to maintain their proficiency when not on deployment. The Navy uses a dual-crew system for SSBNs, in which two crews take turns taking a submarine to sea to perform its mission. That system allows strategic submarines to spend a majority of their service life at sea, compared with less than 30 percent for single-crewed attack submarines.

The Navy, however, does not currently envision dedicating ships to the single mission of missile defense. Instead, it plans to send BMD-capable ships on regular deployments to perform the full range of missions required of surface combatants, although some of the ships would operate in or near the BMD stations, available to perform that mission in the event of heightened tensions. Under such a system, using rotating crews on BMD-capable ships could prove far more challenging because the crews would need to maintain a high level of proficiency in many types of missions.

Alternatively, if the Navy was able to base BMD-capable ships permanently in Europe or the Persian Gulf—as it does now in Japan to counter the threat of North Korean missiles—it might need as few as three to eight ships (one for each station). That estimate assumes that the Navy counts each of those ships as providing full-time presence

on-station, in the same way that it considers ships based in Japan to be providing full-time presence even when they are in port undergoing routine maintenance. But if the Navy needed to guarantee that one ship per station was at sea at all times, it would require a second ship for each of the three to eight stations, doubling the requirement. Those additional ships could also be based at home ports in the European theater.

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HOUSE ARMED SERVICES COMMITTEE

STATEMENT OF

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CONGRESSIONAL RESEARCH SERVICE

BEFORE THE

HOUSE ARMED SERVICES COMMITTEE

SUBCOMMITTEE ON SEAPOWER AND EXPEDITIONARY FORCES

HEARING ON

NAVY FORCE STRUCTURE AND CAPABILITIES

JANUARY 20, 2010

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UNTIL RELEASED BY
HOUSE ARMED SERVICES COMMITTEE

Chairman Taylor, Ranking Member Akin, distinguished members of the subcommittee, thank you for the opportunity to appear before you today to discuss future Navy force structure and capabilities, particularly in light of recent press reports about draft versions of the Navy's FY2011 budget and shipbuilding plan.[1] These press reports suggest that the Navy's FY2011 budget submission could include, among other things,

- a proposed change in required ship force levels from 313 ships to 324 ships;
- a 5-year shipbuilding plan with about 50 ships, of which about half would be relatively inexpensive Littoral Combat Ships (LCSs) and Joint High Speed Vessels (JHSVs);
- a 30-year shipbuilding scenario showing significant reductions in ship-procurement rates in the period FY2019-FY2033 as a possible consequence of procuring new ballistic missile submarines (SSBNs) in those years; and
- a proposal to cancel the CG(X) cruiser program in favor of procuring improved DDG-51 destroyers.

This statement discusses the above points as well as other related issues, including demands for ballistic missile defense (BMD)-capable cruisers and destroyers resulting from the Administration's new plan for European missile defense.

Reported Change In Required Ship Force Levels

A December 2009 press report on a draft version of the Navy's FY2011 30-year (FY2011-FY2040) shipbuilding plan stated that the plan included a proposal to replace the current requirement for 313 battle force ships, which was first presented to Congress in February 2006, with a new requirement for 324 battle force ships. **Table 1** compares the 313- and 324-ship requirements by ship category.

[1]These reports include the following: Christopher P. Cavas, "Next-Generation U.S. Warship Could Be Taking Shape," *Defense News*, November 2, 2009: 18, 20; Christopher J. Castelli, "Navy Confronts $80 Billion Cost Of New Ballistic Missile Submarines (Updated)," *Inside the Pentagon*, December 3, 2009; Christopher J. Castelli, "Navy Raises 313-Ship Goal To 324, Boosts Focus on Missile Defense," *Inside the Navy*, December 7, 2009; Christopher J. Castelli, "Draft Shipbuilding Report Reveals Navy Is Killing CG(X) Cruiser Program," *Inside the Navy*, December 7, 2009; Amy Butler, "STSS Prompts Shift in CG(X) Plans," *Aerospace Daily & Defense Report*, December 11, 2009: 1-2; Christopher J. Castelli, "Pentagon Restores Submarine, Seabasing Ships In Budget Endgame," *Inside the Pentagon*, January 7, 2010; Tony Capaccio, "Gates Tells Navy to Buy 17 Littoral Combat Ships Through 2015," *Bloomberg.com*, January 11, 2010.

Table 1. Comparison of Existing 313-Ship Requirement to Reported New 324-Ship Requirement

	313-ship plan	Reported 324-ship plan	Change from 313-ship plan
Ballistic missile submarines (SSBNs)	14	12	- 2
Cruise missile/SOF submarines (SSGNs)	4	0	- 4
Attack submarines (SSNs)	48	48	
Aircraft carriers (CVNs)	11	11	
Cruisers and destroyers	88	96	+ 8
Littoral Combat Ships (LCSs)	55	55	
Amphibious ships	31	33	+ 2
Subtotal above	***251***	***255***	***+ 4***
MPF(F)[a] ships	12	0	- 12
Combat Logistics Force (CLF)[b] ships	30	30	
Support ships	20	39	+ 19
Subtotal MPF(F), CLF, Support	***62***	***69***	***+ 7***
Total battle force ships	**313**	**324**	**+ 11**

Source: Christopher J. Castelli, "Navy Raises 313-Ship Goal To 324, Boosts Focus on Missile Defense," *Inside the Navy*, December 7, 2009.
a. MPF(F) is Maritime Prepositioning Force (Future).
b. These are underway replenishment (i.e., at-sea resupply) ships.

Observations that can be made in comparing the 313- and 324-ship requirements include the following:

- Although there has been speculation that the Quadrennial Defense Review (QDR) might reduce the required number of aircraft carriers from 11 to 10 or 9, the reported 324-ship requirement would maintain the current requirement for 11 carriers.

- The eight-ship increase in the required number of cruisers and destroyers appears related at least in part to demands for BMD-capable cruisers and destroyers.

- The largest single increase — 19 ships — is for support ships. This increase may be due largely to an increase in the required number of Joint High Speed Vessels (JHSVs). The 313-ship requirement originally included a few JHSVs; the reported 324-ship requirement may include more than 20.

- The reported 324-ship requirement eliminates the requirement for a 12-ship squadron of next-generation Maritime Prepositioning Force (Future) (MPF[F]) ships. A draft version of the report on the Navy's FY2011 30-year (FY2011-FY2040) shipbuilding plan reportedly states that the MPF(F) concept is "valid

but not currently within the Navy's fiscal reach."[2] The MPF(F) squadron would give the Navy and Marine Corps (and the Department of Defense [DOD] generally) the capability to use prepositioning ships to assemble landing forces (including personnel) at sea, and to launch and sustain operations ashore directly from a position at sea, without need for an intermediary land base. Having such a capability has been viewed by MPF(F) supporters as critical for responding to projected threats to intermediate land bases. Instead of the MPF(F) squadron, the Navy under the reported 324-ship requirement would enhance the three existing squadrons of current-generation maritime prepositioning ships. This enhancement would improve the three squadrons' current ability to transfer equipment and supplies ashore, but it would not give them the MPF(F) squadron's intended ability to assemble landing forces (including personnel) at sea and launch and to sustain operations ashore directly from a position at sea. In this sense, eliminating the requirement for the MPF(F) squadron would mean the elimination of a new operational concept for prepositioning ships that supporters believed was needed to adequately respond to the future operating environment.

- The two-ship increase in required numbers of amphibious ships would bring the amphibious force requirement to the number (33) that Navy and Marine Corps leaders have agreed is minimally sufficient for meeting the goal of having enough amphibious lift for the assault echelons (AEs) of 2.0 Marine Expeditionary Brigades (MEBs). The 33-ship figure is based on 15 ships for each MEB (AE), plus three extra ships to account for the roughly 10% of amphibious ships that are in overhaul at any given time. As discussed in some detail in a CRS report, the figure of 15 ships per MEB (AE) is a fiscally constrained figure that requires about 20% of the MEB AE's vehicles and about 12% of its cargo to be shifted to the assault follow-on echelon (AFOE), creating some operational risk. To reduce the need for transferring vehicles and cargo from the AE to the AFOE, the Marine Corps would prefer a figure of 17 ships per MEB (AE). The resulting figure of 34 ships, plus four additional ships to account for those in overhaul, results in a fiscally less-constrained amphibious ship goal of 38 ships.[3] The Marine Corps reportedly reiterated its preference for a 38-ship amphibious force in December briefings to congressional staff.[4]

- Under the reported 324-ship requirement, the Navy's four existing SSGNs would remain in service to the late-2020s, as previously planned, but there would be no requirement to replace them upon retirement with new SSGNs.

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[2]Christopher J. Castelli, "Navy Raises 313-Ship Goal To 324, Boosts Focus on Missile Defense," *Inside the Navy*, December 7, 2009. Unlike MPF(F) ships, older-generation maritime prepositioning ships are not considered battle force ships and consequently are not counted toward the 313- or 324-ship totals.

[3]CRS Report RL34476, *Navy LPD-17 Amphibious Ship Procurement: Background, Issues, and Options for Congress*, by Ronald O'Rourke.

[4]Zachary M. Peterson, "Marine Corps Continues To Support DDG-1000, 38-Ship Amphib Fleet," *Inside the Navy*, January 11, 2010.

Reported 5-Year Shipbuilding Plan

The reported 5-year (FY2011-FY2015) shipbuilding plan shown in **Table 2** is based on December 2009 and January 2010 press reports.[5] The January 2010 press reports essentially amended the draft 5-year shipbuilding plan that was reported in December 2009 by adding five more ships — a second Virginia-class attack submarine (SSN) in FY2015, two LCSs (one each in FY2012 and FY2013, for a total of 17 across the FYDP), and two Mobile Landing Platform (MLP) ships (for a total of three across the FYDP). The actual 5-year shipbuilding plan that is to be submitted next month may differ in a few details from the plan shown in **Table 2**, but **Table 2** is accurate enough to support the discussion below.

Table 2. Reported 5-Year (FY2011-FY2015) Shipbuilding Plan

	FY11	FY12	FY13	FY14	FY15	Total
SSN	2	2	2	2	2	10
CVN-78			1			1
DDG-51	2	1	2	1	2	8
LCS	2	3	4	4	4	17
LPD-17		1				1
LHA-6	1					1
MLP	1		1		1	3
JHSV	1	2	2	2	2	9
TATF(X)					1	1
Total	**9**	**9**	**12**	**9**	**12**	**51**

Sources: Christopher J. Castelli, "Navy Raises 313-Ship Goal To 324, Boosts Focus on Missile Defense," *Inside the Navy*, December 7, 2009; Christopher J. Castelli, "Pentagon Restores Submarine, Seabasing Ships In Budget Endgame," *Inside the Pentagon*, January 7, 2010; Tony Capaccio, "Gates Tells Navy to Buy 17 Littoral Combat Ships Through 2015," *Bloomberg.com*, January 11, 2010.

Observations that can be made in assessing the reported 5-year shipbuilding plan shown in **Table 2** include the following:

- The plan includes an average of 10.2 ships per year. This is an increase from the single-digit numbers of ships that have been funded each year since FY1993. Shipbuilding supporters for some time have wanted to increase the shipbuilding rate to 10 or more ships per year. A rate of 10.2 ships per year is above the steady-state replacement rate for a fleet of 324 ships with an average service life of 35 years, which is about 9.3 ships per year.

- Although LCSs and JHSVs account for less than 25% of the Navy's reported 324-ship requirement, they account for about 50% of the ships (26 of 51) to be

[5]Christopher J. Castelli, "Navy Raises 313-Ship Goal To 324, Boosts Focus on Missile Defense," *Inside the Navy*, December 7, 2009; Christopher J. Castelli, "Pentagon Restores Submarine, Seabasing Ships In Budget Endgame," *Inside the Pentagon*, January 7, 2010; Tony Capaccio, "Gates Tells Navy to Buy 17 Littoral Combat Ships Through 2015," *Bloomberg.com*, January 11, 2010.

procured under the reported 5-year plan. In this sense, these relatively inexpensive ships[6] are over-represented in the 5-year shipbuilding plan relative to their portion of the 324-ship requirement, making it easier to procure an average of 10 ships per year for a reported total of $13 billion to $15 billion per year. At some point in the future, when the LCS and JHSV programs run their course and are no longer over-represented in the shipbuilding plan, procuring an average of 10 ships per year could become a considerably more expensive proposition. On this basis, the reported 5-year shipbuilding program shown in **Table 2** does not necessarily imply that the Navy has solved the challenge it faces concerning the long-term affordability of its shipbuilding plans.

- The reported plan contains only two amphibious ships (one LHA-6 in FY2011, and one LPD-17 in FY2012). This could result in a substantial dip in workload starting in FY2013 at Northrop Grumman Shipbuilding's (NGSB's) Gulf Coast yards (the Avondale yard upriver from New Orleans, LA, and the Ingalls yard at Pascagoula, MS), particularly if General Dynamics' Bath Iron Works (GD/BIW) of Bath, ME, which builds destroyers along with the Ingalls yard, receives one-half (or more) of the 1.5 DDG-51 destroyers per year that are in the plan. The dip in workload at NGSB's Gulf Coast yards could be deep enough to prompt speculation about a possible consolidation of some kind at these yards.

Reported 30-Year Shipbuilding Plan

Table 3 and **Table 4** are taken from a December 7, 2009, press report on a draft version of the Navy's 30-year (FY2011-FY2040) shipbuilding plan.[7] The tables show two shipbuilding scenarios. In one of these scenarios (**Table 3**), the Navy pays for 12 next-generation SSBNs without receiving an offsetting increase to the shipbuilding budget (i.e., the Navy pays for the 12 SSBNs "out of hide"). In the other scenario (**Table 4**), the Navy receives an offsetting increase to the shipbuilding budget to pay for these 12 ships. **Table 5** shows differences in total ship quantities between **Table 4** and **Table 3**.

The Navy reportedly is estimating the unit procurement cost of the new SSBN preliminarily at $6 billion to $7 billion, and the shipbuilding plan in **Table 3** reduces annual funding for procuring ships other than SSBNs by roughly that amount during the period FY2019-FY2033, when the SSBNs are procured. This would reduce funding for the procurement of ships other than SSBNs during that period by an annual amount roughly equivalent to one-half of the shipbuilding budget.

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[6]Although the estimated procurement cost of the LCS sea frame has more than doubled since the early years of the program, the LCS remains a relatively inexpensive combatant ship in the sense that the procurement cost of an LCS with a representative embarked mission package is still only a fraction of that of other combatant ships, such as aircraft carriers, submarines, cruisers and destroyers, and amphibious ships. JHSVs, with a unit procurement cost of about $200 million, are (with the exception of the TAT[F], a fleet tug) the least expensive ships in the 5-year shipbuilding plan.

[7]**Table 3** and **Table 4** do not include the five ships — one SSN in FY2015, one LCS each in FY2012 and FY2013, and two MLPs — that January 2010 press reports state have been added to the FY2011-FY2015 portion of the shipbuilding plan.

Table 3. Reported Draft 30-Year Shipbuilding Plan — *If Navy Pays For New SSBNs Without Receiving Offsetting Increase to Shipbuilding Budget*

FY	CVNs	SCs	LCSs	SSNs	SSBNs	Amph	CLF	Supt	Total
11		2	2	2		1		1	8
12		1	2	2		1	1	2	9
13	1	2	3	2				2	10
14		1	4	2				2	9
15		2	4	1				3	10
16		1	3	2		1		2	9
17		2	3	2		1		3	11
18	1	1	2	1			1	3	9
19		1	1	2	1	1		2	8
20		1	1	2			1	3	8
21		2	1	2				1	6
22		1	1	2	1	2	1	3	11
23	1	1	1	1				3	7
24		1	1	1	1		1	2	7
25		1	1	1	1	1			5
26		1	1	1	1		1		5
27		1	1	1	1	1			5
28	1	1	1	1	1	1	1		7
29		1	1	1	1				4
30		1	1	1	1		1	1	6
31		1	1	1	1	1		1	6
32		1	1	1	1	1	1	1	7
33	1	2	1	1	1			1	7
34		2	1	1		1	1	1	7
35		2	1	2				1	6
36		2	1	1		1	1	1	7
37		2	1	2		1		1	7
38	1	2	1	1		1	1	1	8
39		2	1	2				1	6
40		2	1	1		1	1	1	7
Total	**6**	**43**	**45**	**43**	**12**	**17**	**13**	**43**	**222**

Source: *Inside the Navy*, December 7, 2009.
Notes: SCs are surface combatants (destroyers and cruisers); **Amph** are amphibious ships; **Supt** are support ships.

Table 4. Reported Draft 30-Year Shipbuilding Plan — *If Navy Receives Offsetting Increase to Shipbuilding Budget To Pay For New SSBNs*

FY	CVNs	SCs	LCSs	SSNs	SSBNs	Amph	CLF	Supt	Total
11		2	2	2		1		1	8
12		1	2	2		1	1	2	9
13	1	2	3	2				2	10
14		1	4	2				2	9
15		2	4	1				3	10
16		1	3	2		1		2	9
17		2	3	2		1		3	11
18	1	1	2	1			1	3	9
19		2	2	2	1	1	1	3	12
20		1	2	2			1	2	8
21		2	2	2		2	1		9
22		2	2	2	1		1	2	10
23	1	2	2	1		1	1	3	11
24		2	2	2	1		1	2	10
25		2	2	1	1	1	1	1	9
26		2	2	2	1	1	1		9
27		2	2	2	1	1	1		9
28	1	2	2	1	1		1		8
29		3	2	2	1	1	1		10
30		3		1	1	1	1	2	9
31		3		1	1	1	1	2	9
32		3	1	1	1		1	2	9
33	1	3		1	1	1	1	2	10
34		3	2	1			1	2	9
35		3	2	2		2	1	2	12
36		2	2	1			1	2	8
37		2	2	2		1		2	9
38	1	2	2	1				2	8
39		2	2	2		2		2	10
40		2	2	1					5
Total	**6**	**62**	**60**	**47**	**12**	**20**	**20**	**51**	**278**

Source: *Inside the Navy*, December 7, 2009.
Notes: SCs are surface combatants (destroyers and cruisers); **Amph** are amphibious ships; **Supt** are support ships.

Table 5. Difference in ship quantities between Table 4 and Table 3.

	CVNs	SCs	LCSs	SSNs	SSBNs	Amph	CLF	Supt	Total
Table 4	6	62	60	47	12	20	20	51	278
Table 3	6	43	45	43	12	17	13	43	222
Difference	nc	- 19	- 15	- 4	nc	- 3	- 7	- 8	- 56
Difference (%)	nc	- 31%	- 25%	- 9%	nc	- 15%	- 35%	- 16%	- 20%

Source: Prepared by CRS based on data in Table 3 and 4.
Notes: SCs are surface combatants (destroyers and cruisers); **Amph** are amphibious ships; **Supt** are support ships; **nc** is no change.

Observations that can be made in assessing the figures in **Table 3**, **Table 4**, and **Table 5** include the following:

- If the Navy pays for the SSBNs "out of hide" and allocates resulting reductions to other shipbuilding programs as shown in **Table 3**, the total number of ships procured would be reduced by 56, or about 20%. The largest numerical reductions would occur in procurement of cruisers and destroyers (19 ships) and LCSs (15 ships). The largest percentage reductions would occur in procurement of combat logistics force (CLF) ships (35%) and cruisers and destroyers (31%).

- If the Navy pays for the SSBNs "out of hide" and allocates resulting reductions to other shipbuilding programs as shown in **Table 3**, procurement rates for surface ships of all kinds during the period FY2019-FY2033 would be reduced to levels low enough to make a substantial consolidation of some kind of the surface ship construction industrial base a distinct possibility, if not a likelihood.

- By drafting the two shipbuilding scenarios in **Table 3** and **Table 4**, the Navy is in effect reviving a debate that has occurred from time to time as to whether an individual military service should pay "out of hide" for military force structure elements that serve a national mission of strategic nuclear deterrence. CRS testimony to this subcommittee two years ago stated that the Navy appeared to be reviving (or reserving the option of reviving) this debate by not including the procurement cost of the SSBNs in the FY2009 30-year shipbuilding plan.[8]

Reported Resulting Long-Term Force Levels

Table 6 and **Table 7**, which are taken from the December 7, 2009, press report on a draft version of the Navy's 30-year (FY2011-FY2040) shipbuilding plan, show the ship force levels that the Navy projects would result from the ship-procurement rates shown in **Tables 3** and **Table 4**, respectively.

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[8]See Statement of Ronald O'Rourke, Specialist in Naval Affairs, Congressional Research Service, Before the House Armed Services Committee Subcommittee on Seapower and Expeditionary Forces Hearing on The Navy Shipbuilding Budget Request, March 14, 2008, which stated on page 8 that:

> The Navy's SSBNs perform a mission of strategic nuclear deterrence, which can be viewed as more a national mission than a Navy one. From time to time in past years, observers have discussed whether it is appropriate for one service or another to be required to use funds from its own budget to pay for the performance of a national mission like strategic nuclear deterrence. The Navy's decision in the FY2009 30-year shipbuilding plan to exclude the cost of the 12 SSBNs from its estimated cost to implement the plan might be interpreted as a signal that, in light of its shipbuilding recapitalization financing challenge, the Navy is reviving (or reserving the option of reviving) this discussion in connection with the cost of the 12 replacement SSBNs.

Table 6. Projected Force Levels Resulting From Table 3 *(i.e., If Navy Pays For New SSBNs Without Receiving Offsetting Increase to Shipbuilding Budget)*

FY	CVNs	SCs	LCSs	SSNs	SSGNs	SSBNs	Amph	MIW	CLF	Supt	Total
11	11	110	2	53	4	14	29	14	30	17	284
12	11	107	4	54	4	14	30	14	32	17	287
13	10	102	7	55	4	14	30	14	32	19	287
14	10	96	9	55	4	14	30	14	34	20	286
15	11	91	11	54	4	14	31	14	34	22	286
16	11	93	14	51	4	14	33	14	34	24	292
17	11	92	18	51	4	14	33	13	34	27	297
18	11	94	22	50	4	14	33	13	34	29	304
19	11	94	25	51	4	14	33	11	34	30	307
20	12	96	28	49	4	14	33	10	34	31	311
21	12	96	30	48	4	14	35	7	34	32	312
22	12	95	31	47	4	14	35	6	33	33	310
23	11	94	32	47	4	14	36	2	32	36	308
24	11	93	33	45	4	14	36	1	32	37	306
25	12	91	34	44	4	14	35	0	31	36	301
26	12	88	35	43	2	14	35	0	31	36	296
27	12	86	36	42	1	13	34	0	28	37	289
28	11	83	37	40	0	13	35	0	28	37	284
29	11	79	38	39	0	13	34	0	26	36	276
30	12	75	39	38	0	12	32	0	26	35	269
31	12	70	40	40	0	12	31	0	24	34	263
32	11	67	41	40	0	12	31	0	25	34	261
33	11	65	41	41	0	12	30	0	25	33	258
34	11	62	42	42	0	12	30	0	25	33	257
35	12	61	42	43	0	12	28	0	23	32	253
36	11	60	43	44	0	12	27	0	24	31	252
37	11	57	42	45	0	12	27	0	24	30	248
38	11	56	40	44	0	12	26	0	24	29	242
39	11	54	39	44	0	12	26	0	24	28	238
40	11	53	38	44	0	12	27	0	25	27	237

Source: *Inside the Navy*, December 7, 2009.

Notes: SCs are surface combatants (destroyers and cruisers); **Amph** are amphibious ships; **MIW** are mine warfare ships; **Supt** are support ships.

Table 7. Projected Force Levels Resulting From Table 4 *(i.e., If Navy Receives Offsetting Increase to Shipbuilding Budget To Pay For SSBNs)*

FY	CVNs	SCs	LCSs	SSNs	SSGNs	SSBNs	Amph	MIW	CLF	Supt	Total
11	11	110	2	53	4	14	29	14	30	17	284
12	11	107	4	54	4	14	30	14	32	17	287
13	10	101	7	55	4	14	30	14	32	19	286
14	10	96	9	55	4	14	30	14	34	20	286
15	11	91	11	54	4	14	31	14	34	22	286
16	11	93	14	51	4	14	33	14	34	24	292
17	11	92	18	51	4	14	33	13	34	27	297
18	11	94	22	50	4	14	33	13	34	29	304
19	11	94	25	51	4	14	33	11	34	30	307
20	12	96	28	49	4	14	33	10	34	31	311
21	12	96	30	48	4	14	35	7	34	32	312
22	12	95	32	47	4	14	35	6	33	34	312
23	11	94	34	47	4	14	36	2	33	36	311
24	11	94	36	45	4	14	36	1	33	36	310
25	12	92	39	44	4	14	36	0	33	34	307
26	12	89	40	43	2	14	35	0	33	33	301
27	12	88	42	42	1	13	36	0	31	34	299
28	11	86	44	40	0	13	36	0	31	34	295
29	11	83	46	39	0	13	35	0	30	34	291
30	12	80	49	39	0	12	33	0	30	34	288
31	12	76	50	41	0	12	34	0	29	33	287
32	11	74	52	42	0	12	32	0	30	33	286
33	11	73	51	44	0	12	32	0	31	33	287
34	11	72	51	45	0	12	32	0	31	33	288
35	12	73	51	47	0	12	31	0	30	33	290
36	11	74	51	48	0	12	30	0	31	33	291
37	11	73	51	49	0	12	30	0	32	33	292
38	11	73	50	48	0	12	28	0	32	33	288
39	11	72	50	48	0	12	29	0	33	33	289
40	11	72	50	48	0	12	30	0	34	33	291

Source: *Inside the Navy*, December 7, 2009.
Notes: SCs are surface combatants (destroyers and cruisers); **Amph** are amphibious ships; **MIW** are mine warfare ships; **Supt** are support ships.

Observations that can be made in assessing the figures in **Table 6** and **Table 7** include the following:

- In **Table 6** — where the Navy pays for the SSBNs "out of hide" — Navy ship force levels drop well below figures in the reported 324-ship requirement (or in the current 313-ship requirement). Among other things, the total number of battle force ships declines to 237, or about 27% below the reported 324-ship goal; the cruiser-destroyer force declines to 53 ships, or about 45% below the reported 96-ship goal; the LCS force never rises higher than 43 ships, which is about 22% below the reported 55-ship force-level goal; and the amphibious force

declines to a minimum of 26 ships, or about 21% below the reported 33-ship force-level goal.

- A Navy with the ship force levels shown in the latter years of **Table 6** would have substantial capability and capacity shortfalls relative to Navy requirements for performing a range of missions, including peacetime presence and engagement, humanitarian assistance and disaster response (HADR) operations, regional deterrence, assurance, and stabilization, and conventional warfighting.

- Although overall ship force levels do not begin decline in **Table 6** until the latter years of the 30-year period, knowledge of the projected eventual decline could immediately begin to generate or reinforce perceptions of the United States as a declining power. Such perceptions could embolden potential adversaries, demoralize U.S. allies and partners, encourage states to set aside U.S. policy goals when they judge those goals to be inconvenient, encourage states to align their policies more closely with those of perceived rising powers, such as China, or encourage nations to take self-defense actions that the United States does not want them to take, such as acquiring nuclear weapons. Such developments could make it more difficult for the United States to achieve policy goals in a variety of areas, such as international trade, international finance, climate change, and non-proliferation.

- Perceptions of the United States as a declining power that might be generated or reinforced by figures similar to those in **Table 6** might be particularly likely among observers in the Pacific Basin, where naval forces play a prominent role in military operations, and where China, which is modernizing its navy,[9] is viewed by various observers as a rising power. Perceptions among Pacific Basin observers of the U.S. as a declining power and of China as a rising power could shape the political evolution of that region in ways that might not be conducive to the achievement of various U.S. policy goals. Some observers reportedly have detected a new "sense of triumphalism" among Chinese officials that is complicating U.S.-China relations and the achievement of U.S. policy goals.[10]

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[9]For a discussion of China's naval modernization effort, see CRS Report RL33153, *China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress*, by Ronald O'Rourke.

[10]A January 3, 2010, press article about U.S.-China relations, for example, stated:

> Still, U.S. officials and analysts have noticed a new assertiveness — what one senior U.S. official called a "sense of triumphalism" — on the part of officials and the public in China. This stems from a sense in Beijing that the global economic crisis proves the superiority of China's controlled economy and its authoritarian political system — and that the West, and in particular the United States, is in decline.
>
> This triumphalism was on display during the recently concluded climate talks in Copenhagen. China only sent a deputy foreign minister to meetings set for the level of heads of state; its representatives publicly clashed with their American counterparts. And during the climax of the conference, China's security team tried to block Obama and the rest of his entourage from entering a meeting chaired by China's prime minister, Wen Jiabao.
>
> That type of swagger is new for China and it could make for a stronger reaction from Beijing.

(continued...)

Particularly in light of China's own naval modernization effort, a perception among Chinese officials of declining U.S. naval capabilities could add to such a dynamic.

- Preventing or mitigating perceptions of the United States as a declining power might require near-term actions to assure observers that the SSBN procurement program will not result in significant reductions to other U.S. Navy shipbuilding programs.

- In **Table 7** — where the Navy receives an increase to its shipbuilding budget to offset the cost of the SSBNs — the Navy still falls short of achieving force levels called for in the reported 324-ship requirement (or the current 313-ship requirement). Among other things, the total number of battle force ships never rises higher than 312, and declines to less than 300 starting in FY2027; the cruiser-destroyer force declines to 72 ships, or 25% below the reported 96-ship goal; and the LCS force never rises higher than 51 ships.

- Under either scenario (**Table 6** or **Table 7**), the SSN force drops below the required number of 48 boats in FY2022 and declines to a minimum of 38 or 39 boats in FY2029 or FY2030. In **Table 6**, where the Navy pays for the SSBNs "out of hide," the SSN force remains below the 48-boat goal through the end of the 30-year period. The projected SSN shortfall has been a subject of CRS reporting and testimony since 1995.

As a more general observation, the shipbuilding and force-level situation outlined in **Tables 2 through 7** can be viewed as an acknowledgment by the Navy of the shipbuilding affordability challenge that has been discussed in multiple CRS and CBO reports and testimony in recent years. The projection in **Table 6** of the total number of battle force ships declining to the mid-200s is broadly consistent with CBO projections in recent years of the eventual number of battle force ships if the Navy's shipbuilding budget is not increased and the mix of ships being procured is not substantially changed.

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[10](...continued)

"If they really believe the United States is in decline and that China will soon emerge as a superpower, they may seek to take on the U.S. in ways that will cause real problems," said Bonnie S. Glaser, an expert on China with the Center for Strategic and International Studies.

Complicating this picture is the view of some American analysts that the Obama administration — with its intensive outreach to Beijing — tried too hard in its first year to cultivate ties with China. Playing hard to get might have helped smooth out China's swagger, they suggest.

"Somehow the administration signaled to the Chinese that we need them more than they need us," [David M.] Lampton [director of China studies at the Johns Hopkins School of Advanced International Studies] said. "We're in the role of the supplicant."

(John Pomfret, "After A Year Of U.S. Wooing, Chill Expected In Relations With China," *Washington Post*, January 3, 2010: 3. See also John Pomfret, "U.S. Faces Long Odds In Improved Relations With Asia," *Washington Post*, January 14, 2010: 8.)

Maximizing Shipbuilding Within $13 Billion To $15 Billion Per Year

The situation depicted in **Tables 2 through 7** can raise a question as to how to maximize the number of ships procured each year for a total of $13 billion to $15 billion. Actions frequently mentioned that can contribute to this goal include, among other things:

- using multiyear procurement (MYP) and block-buy contracts where possible,
- otherwise maintaining stability in shipbuilding plans and ship designs,
- increasing commonality across shipbuilding programs in hulls, systems, and components,
- placing more emphasis in new ship designs on design for producibility and production engineering;
- improving shipyard production technologies, processes, and methods, and
- supporting research and development work aimed at developing less expensive materials and at reducing the size, weight, and cost of key ship systems, such as radars and integrated electric drive equipment.

Measures such as these can help maximize the number of ships that could be procured each year for $13 billion to $15 billion, but they can accomplish only so much. They cannot turn a budget sufficient for 6 ships into one sufficient for 10 ships. If actions such as these are not sufficient to increase the number of ships procured each year to desired levels, an additional option would be to alter the mix of ships being procured to include a larger proportion of less-expensive ships. Less-expensive ships could be either smaller ships or larger ships that are built on commercial-like hulls or are less-expensively outfitted. The reported FY2011-FY2015 shipbuilding plan shown in **Table 2** can be viewed as reflecting the use of this option, since relatively inexpensive LCSs and JHSVs account for about half of the ships in the plan, even though they represent less than a quarter of the ships in the 324-ship requirement. A strategy of altering the mix of ships to be procured to include a larger proportion of less-expensive ships, if maintained over the longer run, could result in a Navy that numerically might exceed 300 ships, but which might nevertheless have capability shortfalls for performing various missions.

Increasing Ship Service Lives

If ship-procurement rates are constrained by funding limitations, achieving and maintaining desired force levels may require increasing ship service lives. If, for example, battle force ships are procured over the long run at an average rate of 7.4 ships per year (the average rate that would result from the 222-ship shipbuilding scenario shown in **Table 3**) and the average service life of a Navy ship were 35 years, then the number of battle force ships over the long run would converge toward a figure of about 259 ships (a figure similar to those shown in the final years of **Table 6**). If, however, average ship life is increased from 35 years to 45 years, then this same average shipbuilding rate would over the long run result in a Navy that converges toward a figure of 333 ships, which is fairly close to the reported new goal of 324 ships. Increasing average ship life for the Navy as a whole to 45 years could involve, among other things, increasing cruiser and

destroyer service lives from 35 years to about 45 years, and increasing SSN service lives from 33 years to about 45 years.

Increasing ship service lives would have its costs. In addition to measures taken to ensure that ships can remain in service to the end of their existing service lives,[11] existing ships might need higher levels of maintenance work during their lives, as well as additional rounds of combat system modernization work to permit them to remain in service beyond their original design lives. Additional nuclear refuelings might be needed for SSNs, including Virginia-class boats, which were designed in the expectation that they would not be refueled. The procurement cost of new ships might increase as a result of building them to more rugged standards or with materials that are more expensive but more durable. If the additional funding for extending the lives of existing ships or for increasing the design lives of new ships were to come from within the shipbuilding budget, it would, other things held equal, reduce the shipbuilding rate, which would reduce the long-term force-level gains associated with extending ship service life. Even so, the result might be a Navy with more ships than would be the case if ship service lives were not lengthened.

Building new ships with increased design lives could have other implications. It could increase the importance of building new ships with open-architecture combat systems and physical open architecture features (such as those in the LCS), so as to minimize the cost of modernization work performed over the ships' long lives. It might also require that ships be built with larger growth margins in areas like weight, space, center of gravity, electrical power, and cooling capability, so as to ensure that the ships could support the modernization work that would be needed to maintain their mission effectiveness during the final years of their long lives. A growth margin in a new-construction ship that might be adequate for an anticipated 35-year life might be inadequate for an anticipated 45-year life.

Increasing Percentage of Ship Lives Spent On Station

If measures to spend available shipbuilding funds efficiently and to increase ship service life are not sufficient to achieve and maintain a 324-ship fleet, an additional option would be to increase the percentage of ship lives spent on station in overseas operating areas. This could be accomplished through one or more of the following: forward homeporting additional ships, using extended-duration (e.g., 18- or 24-month) deployments with crew rotation (sometimes called Sea Swap), and operating ships with an average of more than one crew for each ship (multiple crewing). Such measures might permit a Navy with fewer than 324 ships to meet the forward-deployed presence requirements of a 324-ship fleet. Depending, however, on how many ships are required for warfighting as opposed to presence, such a fleet might or might not have enough ships to meet requirements for warfighting.

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[11]For examples of recent articles discussing such measures, see Geoff Fein, "Navy To Expand Effort To Determine Service Life Condition of Surface Ships," *Defense Daily*, January 13, 2010: 7-8; and Otto Kreisher, "Admiral: Fleet Size Hinges On Larger Maintenance Budget," *National Journal's CongressDailyAM*, January 13, 2010.

Demands For BMD-Capable Ships

The Administration's new plan for European BMD has prompted questions about how many BMD-capable cruisers and destroyers will be needed for European BMD operations, and what effect this will have on required numbers of cruisers and destroyers and on the Navy's ability to meet demands for BMD-capable ships in other regions, such as the Western Pacific. As mentioned earlier, the reported increase in the cruiser-destroyer requirement from 88 ships to 96 ships appears related at least in part to demands for BMD-capable cruisers and destroyers.

The number of BMD-capable cruisers and destroyers that will be needed for European BMD operations will depend on the number of BMD-capable ships that are to be kept on station in European waters, the way in which being on station is defined, and the Navy's approach for providing ships for those stations.

General James Cartwright, the Vice Chairman of the Joint Chiefs of Staff, testified last year that for "early-stage" European BMD operations, DOD is considering maintaining two BMD-capable ships at each of three European BMD stations, for a total of six ships on station.[12] Those figures could change; if they do, the discussion below can be adjusted accordingly.

If the Navy relied entirely on East Coast-homeported destroyers operating on seven-month deployments for supporting European BMD operations, then maintaining six ships continuously on station in European waters could require approximately 26 ships.[13] This figure might be taken as a high-end or worst-case analysis. The figure could be reduced by:

- **increasing trans-Atlantic transit speeds**, which would marginally reduce stationkeeping multipliers by reducing transit times (but also increase fuel consumption during transits);

- **using Sea Swap** — that is, extended-length (e.g., 18- or 24-month) deployments with crew rotation — which could substantially reduce stationkeeping multipliers by reducing the number of trans-Atlantic transits;

- **using multiple crewing** – that is, operating the ships with an average of more than one crew for each ship — which could substantially reduce stationkeeping multipliers by increasing the percentage of time that each ship is in deployed status;

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[12]Emelie Rutherford, "Congress To Probe Possible Need For More Ships For Obama Missile-Defense Plan," *Defense Daily*, January 12, 2010: 1-2; Pat Host, "Lawmaker: Pacific Left Vulnerable Under New Missile Defense Plan," *Inside the Navy*, October 19, 2009; Dan Taylor, "O'Reilly: Pentagon To Send BMD Ships To Eastern Mediterranean," *Inside the Navy*, October 5, 2009; Dan Taylor, "Cartwright: Navy May Station Six Aegis BMD Ships Near Europe." *Inside the Navy*, September 28, 2009; Emelie Rutherford, "Navy Ship Role In New Missile-Defense Architecture Questioned," *Defense Daily*, September 25, 2009: 2-3.

[13]This number is based on a stationkeeping multiplier of 4.4 for Norfolk-based DDG-51s deploying to the European Command's area of responsibility on 7-month deployments. The stationkeeping multiplier is the number of ships of a given type and a certain homeporting location that are needed to maintain one ship of such ship continuously on station in a certain overseas operating area. (Source for stationkeeping multiplier: Navy information paper on stationkeeping multipliers dated December 30, 2009, provided by the Navy to CRS on January 8, 2010.)

- **homeporting the ships in Europe**, which could substantially reduce stationkeeping multipliers by eliminating most trans-Atlantic transits (some trans-Atlantic transits might still be needed for maintenance or training reasons);

- **taking advantage of transit presence** — that is, meeting some of the requirement with BMD-capable cruisers and destroyers that are passing through the Mediterranean on their way to or from the Indian Ocean/Persian Gulf region; and

- **using an operational "tether"** — that is, defining "being on station" to mean being in the needed location and ready to conduct BMD operations within a certain number of hours or days of receiving an order. General Cartwright testified last year that DOD is considering using a tether of "a couple of days" for European BMD operations, as it does for BMD operations in the Sea of Japan.[14]

These measures are not mutually exclusive, and pursuing a combination could substantially reduce the number of cruisers and destroyers required to keep six on station. European homeporting, for example, might be combined with multiple crewing and taking advantage of transit presence. Such a strategy, combined with an operational tether, might represent something close to a low-end or best-case analysis.[15]

Reported Plan To Cancel CG(X) In Favor Of Improved DDG-51s

On December 7, 2009, it was reported that the Navy wants to cancel its planned CG(X) cruiser and instead procure an improved version of the DDG-51.[16] Earlier press reporting had suggested that the Navy might be heading toward such a change in plans.[17] In addition to being concerned about the projected high cost and immature technologies of the CG(X),[18] the Navy reportedly has concluded that it does not need a surface combatant with a radar as large and as capable as the one envisaged for the CG(X), because the Navy will be able to augment data collected by surface combatant radars with data collected by space-based radars. The Navy reportedly has concluded that this would permit projected anti-air warfare (AAW) and BMD missions to be performed

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[14]Pat Host, "Lawmaker: Pacific Left Vulnerable Under New Missile Defense Plan," *Inside the Navy*, October 19, 2009; Dan Taylor, "O'Reilly: Pentagon To Send BMD Ships To Eastern Mediterranean," *Inside the Navy*, October 5, 200.

[15]The aircraft carrier that is homeported in Japan is counted as being present as a forward-deployed ship in the Pacific even when it is at pier or in dry dock in Japan. As a result, the Navy treats the homeporting of a carrier in Japan as reducing to 1.0 the stationkeeping multiplier for keeping a carrier forward-deployed in the Pacific. This counting rule might not be suitable for BMD-capable ships homeported in Europe, since their mission would involve not simply being present, but being ready to conduct BMD operations. Consequently, homeporting the ships in Europe might not reduce to 6 the total number of ships required to keep 6 on station. But it could reduce the stationkeeping multiplier by significantly reducing time spent transiting between home port and the operating station, and perhaps also by permitting the ships to adopt an operational cycle that is more like the operational cycle of the Japan-homeported carrier.

[16]Christopher J. Castelli, "Draft Shipbuilding Report Reveals Navy Is Killing CG(X) Cruiser Program," *Inside the Navy*, December 7, 2009.

[17]Christopher P. Cavas, "Next-Generation U.S. Warship Could Be Taking Shape," *Defense News*, November 2, 2009: 18, 20.

[18]Christopher J. Castelli, "Draft Shipbuilding Report Reveals Navy Is Killing CG(X) Cruiser Program," *Inside the Navy*, December 7, 2009.

adequately with a new surface combatant radar that is the same general size as, but more capable than, the DDG-51's current SPY-1 radar.[19] Reports suggest that this new surface combatant radar would be a scaled-down version of the new Air and Missile Defense Radar (AMDR) originally envisioned for the CG(X).[20]

The improved DDG-51 that the Navy reportedly now wants to procure would be considerably less expensive to procure than the CG(X). The improved DDG-51 would have more AAW and BMD capability than the current DDG-51 design, but less AAW and BMD capability than what was envisioned for the CG(X).

The Navy's reported plan to cancel the CG(X) in favor of procuring improved DDG-51s raises a number of potentially significant oversight issues for the subcommittee, including the following:

- Is there an adequate analytical basis for canceling the CG(X) and instead procuring improved DDG-51s? Should an analysis of alternatives (AOA) or the equivalent of an AOA be performed before committing to this course of action?
- Is there adequate stability in Navy planning for acquisition of surface combatants?
- Would an improved DDG-51 be an adequate substitute for the CG(X)?
- What would be the potential operational implications of a Navy equipped with improved DDG-51s instead of CG(X)s?
- What would be the potential industrial-base consequences of canceling the CG(X) and instead procuring improved DDG-51s?

Each of these questions is addressed at length in a CRS report on destroyer procurement.[21] Regarding the third question — Would an improved DDG-51 be an adequate substitute for the CG(X)? — issues to examine include the following, among others:

- the estimated level of performance that an improved DDG-51, in conjunction with off-board radars, would achieve against advanced anti-ship cruise missiles (ASCMs) and ballistic missiles (including anti-ship ballistic missiles [ASBMs]) in certain operational scenarios;
- the vulnerability of the off-board radars and their data-transmission links to enemy attack, and the reduction in performance of the improved DDG-51s against advanced ASCMs and ASBMs that would result if the off-board radars or data-transmission links are degraded by enemy attack; and

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[19]Amy Butler, "STSS Prompts Shift in CG(X) Plans," *Aerospace Daily & Defense Report*, December 11, 2009: 1-2.

[20]Cid Standifer, "NAVSEA Plans To Solicit Contracts For Air And Missile Defense Radar," *Inside the Navy*, December 28, 2009; "Navy Issues RFP For Phase II of Air And Missile Defense Radar Effort," *Defense Daily*, December 24, 2009: 4.

[21]CRS Report RL32109, *Navy DDG-51 and DDG-1000 Destroyer Programs: Background and Issues for Congress*, by Ronald O'Rourke.

- the improved DDG-51's growth margin.

In assessing the first issue above, the subcommittee can consider, among other things, the data presented in the Navy's briefing on its destroyer Hull/Radar Study.

In assessing the second issue above, the subcommittee can consider, among other things, the current and potential future anti-satellite (ASAT), electronic warfare, and cyberwarfare capabilities of countries such as China.

In assessing the third issue above, the subcommittee can consider, among other things:

- the data presented in the Navy's briefing on its destroyer Hull/Radar study;
- the point mentioned earlier in connection with the option of increasing ship service lives – that a growth margin that might be adequate for an anticipated 35-year life might be inadequate for an anticipated 45-year life; and
- a particular aspect of the growth margin issue — the potential for equipping the ship with a future high-power directed-energy weapon (DEW), such as a laser.

Regarding the third point above, the improved DDG-51 that the Navy appears to be contemplating might not be capable of being fitted in the future with a high-power DEW such as a laser, because the ship might lack the electrical power such a weapon would require. If so, this could be significant, because high-power DEWs could be critical to the Navy's long-term ability to affordably counter ASCMs and ASBMs fielded by a wealthy and determined adversary.[22] If improved DDG-51s could not be backfitted with a high-power DEW, then procuring improved DDG-51s could delay the point at which such weapons could be introduced into the cruiser-destroyer force, and reduce for many years the portion of the cruiser-destroyer force that could ultimately be backfitted with lasers. This might result in an approach to AAW and BMD on cruisers and destroyers that might ultimately be unaffordable for the Navy to sustain in a competition against a wealthy and determined adversary.

If policymakers decide that the Navy's reported improved DDG-51 would not be sufficiently capable, then a follow-on question would be: What higher-capability alternatives are there to the improved DDG-51? If policymakers agree with the Navy that the CG(X) or an AAW/BMD version of a DDG-1000 would be unaffordable, then there would appear to be at least two other alternatives:

- a version of the DDG-51 that is more highly modified than what the Navy appears to be contemplating; and

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[22]The cost for an adversary to build and field an additional land-based ASCM or ASBM might be much less than the cost for the Navy to build and field an additional sea-based missile-launch tube and procure an additional interceptor missile to place in that tube. If so, then it might become unaffordable for the Navy at some point in the future to match each additional ASCM and ASBM that a wealthy and determined adversary might field with an additional launch tube and interceptor missile. DEWs, if successfully developed, promise to reverse this unfavorable cost equation by lowering the marginal cost per shot for intercepting ASCMs and ASBMs to a level well below what it costs an enemy to build an additional ASCM or ASBM.

- a new-design destroyer that is more affordable than the CG(X).

A more highly modified DDG-51 might have a lengthened hull, with the additional volume being used to provide the electrical-generating capacity needed to support a future high-power DEW, and to increase the ship's growth margin. The ship might also include additional features (such as those for reducing crew size) for reducing annual operating and support (O&S) costs. The deckhouse might not be changed from the current DDG-51 design, in which case the ship might carry the same radar as the one that the Navy envisions for its modified DDG-51. The idea of lengthening the DDG-51 design by as much as 55 or 56 feet, and of incorporating features for reduced O&S costs, is discussed in July 2008 CRS testimony to this committee,[23] and in the CRS report on destroyer procurement.[24]

A new-design destroyer could be designed to incorporate a version of the AMDR that is larger and more capable than the version that the Navy envisions for its modified DDG-51 (though not as large and capable as the version that was envisioned for the CG[X]), as well as enough electrical power to support a future high-power DEW. It could include features for reducing annual O&S cost, improved producibility features for reducing construction cost per ton, and a greater degree of physical open architecture than previous cruiser and destroyer designs. The ship's design and development cost could be minimized by leveraging, where possible, existing surface combatant hull designs; by using a modified version of the DDG-51's Aegis combat system or a modified version of the DDG-1000's TSCEI[25] combat system; and by incorporating no technologies not already on, or being developed for, the DDG-51, the reported modified DDG-51, or the DDG-1000, with the possible exception of technologies for reducing annual O&S costs and technologies that would enable an integrated electric drive system that is smaller than that on the DDG-1000.

Compared to the Navy's reported modified DDG-51, a more-highly modified DDG-51 or a new-design destroyer would have higher design and development costs and more technical risk, and would take less-full advantage of the DDG-51 production learning curve.

Table 8 compares certain features of the more-highly modified DDG-51 and a potential new-design destroyer to those of the current DDG-51, the Navy's reported modified DDG-51, an AAW/BMD version of the DDG-1000, and the CG(X).

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[23]Statement of Ronald O'Rourke, Specialist in Naval Affairs, Congressional Research Service, Before the House Armed Services Committee Subcommittee on Seapower and Expeditionary Forces Hearing on Surface Combatant Warfighting Requirements and Acquisition Strategy, July 31, 2008, pp. 2-11.

[24]CRS Report RL32109, *Navy DDG-51 and DDG-1000 Destroyer Programs: Background and Issues for Congress*, by Ronald O'Rourke.

[25]TSCEI stands for Total Ship Computing Environment Infrastructure.

Table 8. Some Potential Features of Destroyer and Cruiser Designs

	Current DDG-51	Navy's reported improved DDG-51	More highly modified DDG-51	Potential new-design destroyer	AAW/BMD version of DDG-1000	CG(X)
Full load displacement (tons)	~9,500	~9,500	10,000 to 11,000	11,000 to 12,000?	~15,000	15,000 to 23,000?
Combat system	Aegis	modified Aegis	modified Aegis	modified Aegis or modified TSCEI	modified TSCEI	modified Aegis or modified TSCEI?
Radar capability (** is highest)**	* (SPY-1)	** (SPY-1-sized AMDR)	** (SPY-1-sized AMDR)	*** (AMDR somewhat larger than SPY-1)	*** (AMDR somewhat larger than SPY-1)[a]	**** (full-size AMDR)
Electrical power for high-power DEW	perhaps not	perhaps not	yes	yes	yes	yes
Growth margin	some	some	more	more	more	more
Features for reducing annual O&S cost	some	some	more	more	more	more
Physical open architecture	some	some	some	more	some	more
Design and development cost (*** is highest)**	*	**	***	****	** or ***	*****
Technical risk (*** is highest)**	*	**	***	****	** or ***	*****
Leverages DDG-51 or DDG-1000 production learning curve (** is most)**	****	***	**	*	***	*
Producibility features for reducing construction cost per ton	some	some	some	more	more	more

Source: Table prepared by CRS.
a. May require redesign of deckhouse to 4-face configuration. If deckhouse is not redesigned, the radar might be closer to ** than to ***.

LCS Program

The acquisition strategy for the LCS announced by the Navy last September poses a number of potential oversight issues that are discussed at length in the CRS report on the LCS program.[26] In addition to those issues, the following observations can be made about the LCS program in connection with recent press reports about draft versions of the Navy's FY2011 budget and shipbuilding plan:

[26]CRS Report RL33741, *Navy Littoral Combat Ship (LCS) Program: Background, Issues, and Options for Congress*, by Ronald O'Rourke.

- The five year (FY2011-FY2015) shipbuilding plan reported in December 2009 shows LCS sea frames being funded in the shipbuilding plan with apparent unit procurement costs that are close to $600 million. Whether this would be consistent with the LCS program unit procurement cost cap as amended by Section 121 of the FY2010 defense authorization act (H.R. 2647/P.L. 111-84 of October 28, 2009) is a question that the subcommittee may wish to explore with the Navy.

- In **Table 4**, the reduction in the LCS procurement rate to two ships per year starting in FY2018 suggests that the Navy, after establishing two yards to build LCSs, may seek to conduct a downselect to choose one builder to build all the LCSs shown in FY2018-FY2029 (i.e., the remaining ships in the 55-ship LCS program).[27]

- The LCS procurement rate shown in **Table 4** stretches out the 55-ship LCS program to a total of 25 years (FY2005-FY2029). This may not be consistent with arguments the Navy has made in the past about the urgency of getting LCSs into the fleet to close identified capability gaps. Although shipbuilding funding limitations may prevent the Navy from procuring the five or more LCSs per year shown in the outyears of past Navy shipbuilding plans, maintaining a production rate of four per year would complete the 55-ship procurement six years earlier, in FY2023.

LPD-17 Program

The reported five year (FY2011-FY2015) shipbuilding plan shown in **Table 2** would apparently stop LPD-17 production after the procurement of the 11th ship in the class in FY2012. Some observers have proposed using the LPD-17 design as the basis for the LSD(X), which is the projected replacement for the 12 existing LSD-41/49 class amphibious ships. Ending LPD-17 procurement in FY2012 would reduce the cost benefits of using the LPD-17 design as the basis for the LSD(X) because the lengthy break in LPD-17 procurement between FY2012 and the planned start of LSD(X) procurement years from now would result in a loss of learning-curve benefits for the LPD-17 design and perhaps additional LPD-17 program shut-down and restart costs. Procuring an additional LPD-17 within the five-year shipbuilding plan, perhaps in FY2014, as the first LSD(X) would result in an earlier-than needed replacement for the first retiring LSD-41/49 class ship, but could reduce the total costs over time of using the LPD-17 design as the basis for the LSD(X) by reducing the loss in LPD-17 learning-curve benefits and perhaps avoiding other LPD-17 program shut-down and restart costs.

Mr. Chairman, distinguished members of the subcommittee, this concludes my testimony. Thank you again for the opportunity to appear before you to discuss these issues. I will be pleased to respond to any questions you might have.

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[27]The 15 LCSs shown in **Table 4** for FY2032-FY2040 appear intended as replacements for 15 of the first 55 LCSs.

NAVAL SHIPBUILDING: QDR WON'T RESOLVE FUNDING SHORTFALL OR REQUIREMENTS FEUD

Remarks before the Seapower & Expeditionary Forces Subcommittee of the House Armed Services Committee

Loren B. Thompson, Ph.D.
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Chief Executive Officer, Source Associates

January 20, 2010

Thank you for the opportunity to present my views on the Quadrennial Defense Review and future naval shipbuilding requirements.

The QDR will be organized around four themes...

-- Prevailing in today's wars.

-- Preserving the force.

-- Preventing new conflicts.

-- Preparing for diverse contingencies.

Within that framework, the document will focus mainly on near-term challenges, emphasizing the need to allocate more resources to so-called asymmetric threats -- both low-end threats like terrorism, and high-end threats like cyber attacks.

The goal is to balance joint capabilities for coping with conventional and unconventional aggression, an approach that poses little danger to naval shipbuilding plans since each vessel in the fleet is versatile and adaptable.

However, the current fiscal environment imposes two pressures on shipbuilding plans that the QDR will not be able to fix...

-- First, America's economy has fallen from 32% of global output at the beginning of the decade to 24% today, so we will not be able to continue generating nearly half of all the world's military outlays.

-- Second, the rising price of military pay and benefits is squeezing technology spending out of defense budgets, creating deep tensions between the Navy and Marine Corps about which ships to build.

Both of these trends portend bitter debate over shipbuilding plans in the years ahead.

I would like to spend half my time today discussing the undersea fleet, since that is where the biggest funding dilemma confronts us, and then devote the other half to examining the Navy's changing plans for the surface fleet.

Undersea Fleet

Turning to the undersea fleet, submarines are probably the only warships we can be sure will still be survivable in hostile environments at mid-century.

Aside from a handful of special-use subs, America's undersea fleet consists of two types of vessels: ballistic-missile boats that provide secure retaliatory forces to our nuclear deterrent, and fast-attack subs that collect intelligence while conducting an array of other military missions.

The quadrennial review will reaffirm the priority of the nuclear-deterrence mission, but it will also signal that the other two components of the nuclear force -- bombers and land-based missiles -- are likely to contribute less capability in the future.

So ballistic-missile submarines will become even more important in deterring nuclear attack, which has two implications...

-- First, we must be ready to replace Trident ballistic-missile subs when they begin retiring in 2027.

-- Second, the replacements must be even quieter than Tridents to assure they cannot be targeted in a surprise attack.

In other words, the Navy can't just build more Tridents -- it needs to design a better successor, and in order for the new sub to be ready on time, the six-year design process must commence in 2012.

Assuming a successful design phase, the Navy plans to begin building the lead ship in 2019, begin a second ship in 2022, and then build one ship per year from 2024 to 2033 (when the required number of twelve will be reached).

But each Trident replacement after the lead ship will cost $5 billion, and the only way to find that kind of money in already overstretched shipbuilding accounts would be to defer other vessels.

This funding dilemma is made worse by the fact that the Navy waited too long to ramp up production of the Virginia-class attack sub, so it will be unable to prevent the attack-sub inventory from falling below the required number of 48 once the Los Angeles class begins retiring later this year.

The plan for attack subs had been to develop a Virginia successor so that something even better would be ready when the production goal of 30 boats was reached, but that can't happen while the Trident replacement is tying up design capabilities.

The Navy can manage the looming shortfall in attack subs by incrementally extending the lives of legacy subs and lengthening the tours of sailors at sea, but it will have to build two Virginias every year between 2011 and 2025 to avoid falling below 43 boats at the lowest point in 2028.

The good news is that the time and money required to build each new Virginia is falling steadily, and there is much we can do to improve the ship's already impressive performance if production is extended to 40 or more vessels -- such as adding the new launch canisters and bow sonar array that will first appear on Block III ships.

Nonetheless, we can't accommodate all this undersea design and construction work within the likely shipbuilding budget without displacing required surface vessels, and special steps will therefore be needed to fund the Trident replacement.

With ballistic-missile subs destined to become the most important part of our nuclear deterrent in the future, there is a strong case for funding the Trident replacement outside normal budget channels rather than cutting construction of other warships to cover the cost of our most important military mission.

Surface Fleet

Turning to the surface fleet, many of you have no doubt heard the hottest shipbuilding rumor spawned by the QDR process -- that the number of aircraft carriers will be cut from eleven to ten, or even nine.

It is true that we are headed down to ten in 2013 because of the time-gap between when Enterprise retires and the first Ford-class carrier joins the fleet, but that is a temporary situation.

Although the Navy could meet current warfighting requirements with one or two less carriers, a permanent cut wouldn't be prudent for two reasons...

-- First, warfighting needs are likely to change in the future.

-- Second, wartime attrition is likely to occur in the future.

So it makes little sense to cut the number of carriers to the absolute minimum currently required, and the Navy's 2011 shipbuilding plan will call for maintaining eleven flattops through 2040.

The Ford class will improve carrier performance markedly over the Nimitz class, delivering more sorties, more power and more protection while generating long-term savings by eliminating hundreds of personnel from crewing requirements.

However, the real key to future carrier viability may not reside in a new hull, but in getting better aircraft on the flight deck.

Acquiring the stealthy F-35 fighter, and then pushing ahead with the Navy's unmanned combat air vehicle, are essential steps in sustaining sea-based strike power and carrier survivability over the next few decades.

I wish I could say the story was that simple for the rest of the surface fleet.

What we see there, though, is an unsettled picture created in equal parts by lack of money and lack of agreement on requirements between the Navy and the Marine Corps.

In the case of surface combatants, the Navy is poised to abandon two of the three new classes it announced at the beginning of the decade, terminating the DDG-1000 land-attack destroyer at three vessels while rethinking the need for a CG(X) missile-defense cruiser based on the same hull.

Instead, it will build an upgraded version of the multi-role DDG-51 destroyer that it says is better suited for coping with emerging overhead and undersea threats.

I think the change in plans makes sense...

-- DDG-1000 is too expensive to populate a 300-ship fleet, and its concept of operations would require putting a valuable asset too close to enemy shores.

-- CG(X) will probably not be needed once the Aegis combat system on legacy destroyers and cruisers is upgraded, because tracking of ballistic-missile warheads can be accomplished in part by relying on off-board sensors such as the new Space Tracking and Surveillance Satellite.

The Marine Corps does not share the Navy view that there will be sufficient surface fires in the planned fleet to support expeditionary forces ashore, but by putting more money into Aegis warships, the Navy will assure that U.S. and allied forces are well defended against emerging ballistic threats while also addressing other challenges like diesel-electric submarines.

The third new combatant announced early in the decade, the Littoral Combat Ship, is essential to expanding fleet numbers above 300, but the Navy has decided for budget reasons to down-select to a single design.

That step really was necessary given the high cost of building, operating and upgrading two ship classes; I predict that if the winning team does a good job of building its ship, the service will elect to save more money by sticking with only one source.

As for the amphibious warfare fleet, that part of the force posture looks likely to be a focus of controversy for years to come.

The Navy and Marine Corps have parted ways on the need for 38 amphibious warships, and as a result the Marines are lobbying the Congress to fund vessels not included in the 2011 shipbuilding plan.

Personally, I agree with the position Chairman Taylor expressed last year that we should fund serial production of new amphibious assault and transport ships to provide the core of a future sea base and replace aging vessels, but that does not seem to be where the Navy wants to go.

Secretary Gates has foreshadowed the possibility that reductions in amphibious-warfare capabilities may emerge from the QDR, but Congress will want to scrutinize the reasoning closely before abandoning the Marine requirement for 38 amphibs.

Having exhausted my time, I will close by observing that even if we kill DDG-1000 and cut back amphibious capabilities, the nation's naval shipbuilding requirements are not likely to fit within projected budgets.

We therefore need to have a discussion about how important nuclear deterrence is to national survival, and fund the submarines supporting that mission in a manner that does not hobble other sea-service missions.

DISCLOSURE FORM FOR WITNESSES
CONCERNING FEDERAL CONTRACT AND GRANT INFORMATION

INSTRUCTION TO WITNESSES: Rule 11, clause 2(g)(4), of the Rules of the U.S. House of Representatives for the 111th Congress requires nongovernmental witnesses appearing before House committees to include in their written statements a curriculum vitae and a disclosure of the amount and source of any federal contracts or grants (including subcontracts and subgrants) received during the current and two previous fiscal years either by the witness or by an entity represented by the witness. This form is intended to assist witnesses appearing before the House Armed Services Committee in complying with the House rule.

Witness name: Loren Thompson

Capacity in which appearing: (check one)

X Individual

___Representative

If appearing in a representative capacity, name of the company, association or other entity being represented:_____

FISCAL YEAR 2009

federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
No direct contract/grant			

FISCAL YEAR 2008

federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
No direct contract/grant			

FISCAL YEAR 2007

Federal grant(s) / contracts	federal agency	dollar value	subject(s) of contract or grant
No direct contract/grant			

Federal Contract Information: If you or the entity you represent before the Committee on Armed Services has contracts (including subcontracts) with the federal government, please provide the following information:

Number of contracts (including subcontracts) with the federal government:

Current fiscal year (2009): 2 subcontracts
Fiscal year 2008: 1 subcontract
Fiscal year 2007: 1 subcontract

Federal agencies with which federal contracts are held:

Current fiscal year (2009): Air Force, Defense Intelligence Agency
Fiscal year 2008: Air Force
Fiscal year 2007: Air Force

List of subjects of federal contract(s) (for example, ship construction, aircraft parts manufacturing, software design, force structure consultant, architecture & engineering services, etc.):

Current fiscal year (2009): QDR, transition planning
Fiscal year 2008: QDR
Fiscal year 2007: QDR

Aggregate dollar value of federal contracts held:

Current fiscal year (2009): $49,546
Fiscal year 2008: $93,749
Fiscal year 2007: $10,000

Federal Grant Information: If you or the entity you represent before the Committee on Armed Services has grants (including subgrants) with the federal government, please provide the following information:

Number of grants (including subgrants) with the federal government:

Current fiscal year (2009): None
Fiscal year 2008: None
Fiscal year 2007: None

Federal agencies with which federal grants are held:

Current fiscal year (2009): _____
Fiscal year 2008: _____
Fiscal year 2007: _____

List of subjects of federal grants(s) (for example, materials research, sociological study, software design, etc.):

Current fiscal year (2009): _____
Fiscal year 2008: _____
Fiscal year 2007: _____

Aggregate dollar value of federal grants held:

Current fiscal year (2009): _____
Fiscal year 2008: _____
Fiscal year 2007: _____

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