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HEARING

ON

NATIONAL DEFENSE AUTHORIZATION ACT FOR FISCAL YEAR 2009

AND

OVERSIGHT OF PREVIOUSLY AUTHORIZED PROGRAMS

BEFORE THE

COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES
ONE HUNDRED TENTH CONGRESS

SECOND SESSION

SEAPOWER AND EXPEDITIONARY FORCES
SUBCOMMITTEE HEARING

ON

BUDGET REQUEST FOR NAVY SHIPBUILDING

HEARING HELD
MARCH 14, 2008

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CONTENTS

CHRONOLOGICAL LIST OF HEARINGS

2008

FRIDAY, MARCH 14, 2008

FISCAL YEAR 2009 NATIONAL DEFENSE AUTHORIZATION ACT—BUDGET REQUEST FOR NAVY SHIPBUILDING

STATEMENTS PRESENTED BY MEMBERS OF CONGRESS

WITNESSES

APPENDIX

FISCAL YEAR 2009 NATIONAL DEFENSE AUTHORIZATION ACT—BUDGET REQUEST FOR NAVY SHIPBUILDING

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
SEAPOWER AND EXPEDITIONARY FORCES SUBCOMMITTEE,
Washington, DC, Friday, March 14, 2008.

The subcommittee met, pursuant to call, at 10 a.m. in room 2212, Rayburn House Office Building, 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. The hearing will come to order.

Today, the subcommittee meets to receive testimony from representatives of the Department of the Navy, Congressional Budget Office, and the Congressional Research Service for the fiscal year 2009 budget request for ship construction.

The subcommittee is pleased to welcome our first panel, the Honorable Allison Stiller, Deputy Assistant Secretary of the Navy, Ship Programs, and Vice Admiral Barry McCullough, Deputy Chief of Naval Operations, Resources and Requirements.

The second panel will consist of Mr. Ronald O'Rourke, Specialist in National Affairs for the Congressional Research Service, and Dr. Eric Labs, Senior Analyst of the Congressional Budget Office.

I also would like to personally welcome all four of our witnesses for their testimony.

Navy and Congress has difficult decisions regarding shipbuilding. It is no secret that the current Administration has been no friend to the Navy. By the time this President leaves office, we will have 60 less ships than when George W. Bush took office. It will be up to the next President and the next Congress to put our Nation back on track to building and maintaining a powerful fleet. However, there are some things we can do and must do this year to set the course for recovery.

Current shipbuilding plans for 313 ships. At the moment that is pure fantasy. It is totally unaffordable with the resources the Department of Defense allocates to the Navy for ship construction. This year, in the annual Long-Range Report to Congress on Shipbuilding, the Navy essentially admits it does not have the funding to build the ships it requires in the far-term which is defined as after 2020.

The Navy also increased projections of the near-term shipbuilding costs from $12.4 billion per year to $15.8 billion per year,

using costs of year 2007 dollars. This was projected by Dr. Labs from the Congressional Budget Office with the Navy's adamant denial. Today, we will have the opportunity for the Navy to explain their revised forecast, and to receive an update from Dr. Labs as to his evaluation of the new forecasts.

I am disappointed with the ever-changing shipbuilding plan. We have been told for the past few years that the key to efficiency is stability, and I agree with that. However, there is nothing stated in this shipbuilding plan. As I analyze the shipbuilding plan, I see four programs that are building ships on time and on budget; that is the LPD–17 class amphibious assault ships, the Arleigh Burke class destroyers, the *Virginia* class submarines, and the T-AKE dry cargo ammunition ship.

And what is the Navy's answer to programs which builds ships on costs and schedule? To cancel the LPD–17 before the minimum Marine Corps requirement of 12 ships is achieved; to cancel the DDG–51 Burke destroyers in favor of a brand-new ship with 10 major technological innovations that may end up costing five times more than Arleigh Burke; to continue to delay construction of two submarines into the year 2011; to cancel the last two ships of T-AKE crafts.

On 5 May, I asked Admiral Keating, the Commander of the Pacific Fleet, on Wednesday if he would rather have two DDG–1000s, or five DDG–51s. He told me he preferred the DDG–51s. This proves to me that the Navy in Washington does not always listen to the Navy that actually operates the fleet.

Although I put the T-AKE in the list of programs which are healthy, I would like our witnesses to address why the T-AKE as requested and funded for fiscal year 2008 is not being put on contract. The subcommittee understands that the money that was requested to purchase the ship was instead used to renegotiate contract times. And I very much want to thank Admiral Sestak for bringing that to the committee's attention. I understand that the Navy thinks it can do this because the money is in a working capital fund called the National Defense Sealift Fund, or NDSF. I can assure you that it is not the intent of Congress that money authorized and appropriated for a specific purpose, in this case procurement of a ship, be used for any other purpose without further authorization on the programming. I expect our Navy witnesses to comment on this today.

Instead of being asked to fund these programs that are building ships on time and at the projected cost, we are asked to fund programs that are not. One such program is the Littoral Combat Ship. This program will go into the textbooks to train future acquisition officers on how not to run a program. The LCS will be at least twice as expensive as advertised and is taking twice as long to build as it should have. Neither vessel has been underway under its own power, and the Navy has canceled two contracts out since last year which are already funded because of cost overruns. Yet this year we are asked to authorize two more ships.

A fair question to ask Ms. Stiller is, "why?" What is the difference between then and now that indicates this program is in any way ready to build more ships? We have been told the answer to this question is that there is an emergency need for these ships in

the fleet. If that is true, then why did the Navy cancel the last two ships? There is no sense throwing money at these programs until the Navy can prove that at least one of these ships can get to sea and do its mission.

They have also asked to continue to fund a class of seven destroyers that are the most expensive surface warships ever built. I understand that the program manager has gone to great lengths to ensure that mistakes that occurred in the LCS program are not repeated in the DDG–1000 program. That is good. However, this ship is, on order of complexity, which is orders of magnitude greater than the LCS; a cost overrun of only 10 percent for the first two ships, which would be excellent for the first class of a ship, is still close to $700 million. With all the new technologies that must work out for the ship to sail, a cost overrun of 20 percent or even 30 percent is not out of the question.

Another very risky program is the new aircraft carrier. Not that the Navy and Newport News don't know how to build aircraft carriers, they do. They do it very well. However, there is one major new technology, the Electromagnetic Airlift Launch System, or the EMALS, has not even been tested in a shipyard configuration, and the ship is already under construction. Just last week, the Navy requested an additional $40 million for continued development of EMALS because, and I quote, "the contractor underestimated design production costs". The cynic in me would say that the contractor purposely low-balled the bid to get the contract, knowing full well the Navy would be forced to pay whatever the true cost of the system turned out to be. Perhaps we should have built another *Nimitz* class carrier until the research and design on that system was complete.

I am concerned with the plans for the so-called Marine Prepositioning Force, commonly known as the MPF(F). I am not convinced that the Navy and Marine Corps are in sync with the requirements of this force. I am not sure that the Navy has a reasonable plan to build these ships efficiently. One thing I do know is that breaking production lines and then restarting them is expensive. Losing the tradesmen who build these ships because of gaps in the Navy plan is unacceptable.

And, last, I am concerned that the Navy is not taking seriously the law that Congress enacted last year concerning the next generation cruiser. The law mandates that the cruiser has an integrated nuclear power system, and it will have. Analysis of alternatives notwithstanding, I expect the Navy will abide by this law, not a recommendation, a law.

I understand that the planned start date for fiscal year 2011 may have slipped due to radar design, among other issues. But the issue is not the power plant. The plant is designed and ready to be built and installed in a hull form resembling our current surface combatants.

I would also like to add for the record that we have taken some journalistic liberty with today's *Washington Post* editorial cartoon. And if you saw the *Washington Post* today, you will find that Uncle Sam was caught in bed with a barrel of oil. And the caption read, "Why does Uncle Sam keep doing risky, stupid things?" with all due respect to the *Washington Post,* we have changed that, and we

have inserted the Navy Admiral, Admiral McCullough, and it now says, "Why does the Navy keep doing stupid, risky things?" because the Navy's pushback on the nuclear powered carrier, to me, strikes me as the exact same thing.

The greatest vulnerability to our Nation's military is our dependence on fuel. At the moment, there is no viable alternative to refuel a Humvee. There is no viable alternative for an F–18 or an F–22. When it comes to surface ships, there is a viable alternative to petroleum, and that is nuclear power. And this committee spoke on that, the Congress spoke on it. It is the law of the land. And, quite frankly, I want to go on record that, as far as I am concerned, we are going to fund a nuclear powered cruiser or we are not going to fund a cruiser at all.

With that, I would like to turn to my very capable assistant, the person who probably has done the best job of any Member of Congress of making me aware of our Nation's vulnerability to having our fuel cut off, and a great asset to this committee, our ranking member, the gentleman from Maryland, Mr. Bartlett.

[The prepared statement of Mr. Taylor can be found in the Appendix on page 47.]

STATEMENT OF HON. ROSCOE G. BARTLETT, A REPRESENTATIVE FROM MARYLAND, RANKING MEMBER, SEAPOWER AND EXPEDITIONARY FORCES SUBCOMMITTEE

Mr. BARTLETT. Thank you very much, Mr. Chairman.

If I might, before I begin my opening statement, I would like to welcome the newest member of our committee. He comes from the First Congressional District in the country, I believe, *Virginia* No. 1. Thank you very much, and welcome to the subcommittee.

Good morning to both panels. First, I would like to say that I could just not give my opening statement and say ditto-ditto to the chairman's statement. I agree completely. Good morning to both panels. Admiral McCullough, Ms. Stiller, Mr. O'Rourke, and Dr. Labs. It is a pleasure to have you here with us today.

The shipbuilding hearing is always one of the most important held by the subcommittee. This year, given the critical choices Congress must make in receiving the proposed shipbuilding budget, this hearing seems all the more significant. When I speak of critical choices, I am referring, of course, to the very issues the chairman has already highlighted.

For example, if we were to accept the budget request at face value, the LPD–17 production line would be shut down. This would mean that nearly 20 percent of the Marine Corps' requirement for amphibious lift would remain unfulfilled. As a Nation, are we willing to accept that risk?

Conversely, if we are forced to restart production after fiscal year 2009, it is patently obvious that the cost of this ship will increase. The cost will increase not only for the LPD–17 line, but for future platforms that could be constructed using the LPD–17 hull form. I, for one, do not want this committee to be complicit in intentionally increasing the cost of shipbuilding, which is, of course, a matter of persistent and escalating concern.

Although Navy procurement accounts grew by over $1 billion, the shipbuilding program did not. The best news in the shipbuilding

program is that the budget request moves up to a per year construction of the *Virginia* class submarine to fiscal year 2011, a year sooner than previously. Ironically, that is not even an fiscal year 2009 matter. I hope both panels of witnesses will discuss what options are available to Congress in 2009 to enable the ramp in production even sooner than fiscal year 2011.

Unfortunately, the rest of the news is rather bleak. From 2008 to 2009, the Navy has reduced the number of ships being procured by approximately 25 percent. One quarter of the ships the Navy planned to build last year are gone. The long-term shipbuilding plan still speaks to a 313-ship Navy, as does the Chief of Naval Operations, but it is time we started facing facts. The Navy will never get there without either top line relief or a significant change in the mix of platforms. The Navy shipbuilding plan is based on the assumption that over the next 30 years the shipbuilding account will nearly triple in size. Do our witnesses really think this is realistic? How can you? If it is not, and I tell you that it is not, then the only other alternative is to look at the mix of platforms.

For example, is it wise to buy destroyers in advance that will cost $3 billion a copy and more likely $5 billion apiece, if the Congressional Budget Office is right, while we shut down stable, more affordable production lines such as the DDG–51 line? How much risk are we buying down with only seven DDG–1000s at a cost of $21 billion to $35 billion, when you could likely have at least 17 upgraded DDG–51s for the same amount? And, how much risk are we buying down if we procure two more Littoral Combat Ships the year after we canceled two, and the year in which the Navy plans to conduct an operational evaluation and possible down select of LCS–1 and LCS–2? If there is no down select, the Navy has stated there will be design changes made to the Flight 1 ships. So the two we buy now will be different than the remaining 50. Is that worth it if those funds could keep a stable program like LPD–17 alive?

There are many more issues like these to consider, but I am eager to hear from our witnesses and to give members an opportunity to ask questions before we are interrupted by votes.

I will conclude by echoing the chairman's remarks about the dedication of the fine people we have testifying before us today. These questions that have been raised are broad in scope and, to a great extent, the responsibility of Congress, not you personally, to sort out. All we can ask of you is that you lay out the true warfighting requirements and be clear about what risks we must accept with the funding choices we will have to make. The rest is up to us.

Thanks again to all four witnesses for your service to our Nation and for being here. Thank you very much, Mr. Chairman.

Mr. TAYLOR. Thank you, Mr. Bartlett.

Mr. Wittman, we want to welcome you to the committee, and I apologize for not formally welcoming you to the committee. It is great to have a new member of the committee, it is great to have someone representing that district here on the subcommittee. And if you would like, we would break with the protocol and allow you to make an opening statement. Now, don't expect us to be nice to you all the time, but it is your first day.

Mr. WITTMAN. Thank you, Mr. Chairman. It is an honor and a privilege to be part of this subcommittee, and I look forward to working with each and every one of you here to make sure that we look after the best interests of our Nation as it relates to our SEACOM. Thank you again for the gracious introduction.

Mr. TAYLOR. Do any other members have an opening statement?

Ms. Stiller, again, Admiral, although it is the Chair of the full committee's desire to limit witnesses to five minutes, one of the beauties of this subcommittee is that we do have more time. And so please take whatever time you need to make your statement, keeping in mind that we will probably have votes around 11. With that, I will recognize Assistant Secretary of the Navy, Ms. Stiller.

STATEMENT OF HON. ALLISON STILLER, DEPUTY ASSISTANT SECRETARY OF THE NAVY, SHIP PROGRAMS

Secretary STILLER. Mr. Chairman, distinguished members of the subcommittee, it is a pleasure for Vice Admiral McCullough and me to appear before you today to discuss Navy shipbuilding. I request that our written statement be entered into the record.

Mr. TAYLOR. Without objection.

Secretary STILLER. The Department is committed to build an affordable fleet at or above 313 ships tailored to support the National Defense Strategy, the recently signed Maritime Strategy, and the 2006 QDR. For the first time in a long while, the Navy's budget does not include funding for any lead ships.

This year, our total of seven ships are included in the 2009 budget. One *Virginia* class submarine, one DDG–1000 class ship, two LCS, two T-AKEs, and one Navy Joint High Speed Vessel (JHSV). In addition, although not part of the Navy's 313-ship force structure, the Navy will procure one JHSV for the Army in fiscal year 2009. I will now elaborate on the specifics of our request.

The Navy is requesting $2.1 billion of full funding for one *Virginia* class submarine in fiscal year 2009, and advance procurement for the fiscal year 2010 boat, and advance procurement for two boats in fiscal year 2011.

The *Virginia* class construction program is continuing to make progress toward realizing CNO's goal of buying two *Virginia* class submarines for $4 billion as measured in 2005 dollars starting in fiscal year 2012. Because of your support with the addition of advance procurement funding last year, the Navy has accelerated the production of two *Virginia* class submarines per year from fiscal year 2012 to fiscal year 2011.

One month ago, the Navy awarded contracts for the construction of the dual DDG–1000 lead ships to General Dynamics, Bath Iron Works, and Northrop Grumman Shipbuilding. The fiscal year 2009 President's budget request of $2.55 billion provides funding for the third DDG–1000 class and advance procurement for the fourth ship.

With recent approval from the Defense Acquisition Executive for the Follow-On Ship Acquisition Strategy, the Navy intends to utilize a fixed price incentive fee contract through a competition for quantity for the remaining five ships.

The Navy remains committed to the Littoral Combat Ship Program, and LCS remains a critical warfighting requirement for our

Navy. The fiscal year 2009 President's budget request includes $920 million for two additional LCS seaframes. The Navy also intends to execute the fiscal year 2008 appropriation for one seaframe, utilizing the remaining funding and material from the terminated ships. Under an acquisition strategy approved in January by the Defense Acquisition Executive, the fiscal year 2008 and 2009 awards will be for fixed price incentive contracts based on limited competition between the current LCS seaframe prime contractors.

The 2009 President's budget request also provides procurement of two T-AKEs in the National Defense Sealift Fund. The fiscal year 2009 funding is for two ships, T-AKE-11 and 12.

The Joint High Speed Vessel program is currently in the technology and development phase. Lead ship award is anticipated late in fiscal year 2008, with delivery of the first vessel in 2011. The fiscal year 2009 President's budget request includes $187 million for the construction of the first Navy funded JHSV, and $173 million for the second Army funded vessel.

We have worked diligently to stabilize our shipbuilding plan and move into serial production. The Navy remains committed to ensure fiscal responsibility in shipbuilding acquisition programs, as evidenced by the cancellation of LCS–3 and four last year.

Mr. Chairman, we would like to thank you for this opportunity to discuss the Navy's shipbuilding budget request for 2009. Vice Admiral McCullough would like to remark briefly on the "A Day in the Navy." Thank you.

Mr. TAYLOR. The Chair recognizes Vice Admiral McCullough.

[The joint prepared statement of Secretary Stiller and Admiral McCullough can be found in the Appendix on page 52.]

STATEMENT OF VICE ADM. BARRY MCCULLOUGH, DEPUTY CHIEF OF NAVAL OPERATIONS FOR INTEGRATION OF CAPABILITIES AND RESOURCES, U.S. NAVY

Admiral MCCULLOUGH. Chairman Taylor, Ranking Member Bartlett, distinguished members of the subcommittee, I am honored to appear before you with Ms. Stiller to discuss Navy shipbuilding. Before we begin, I would like to share with you what your Navy accomplished one day last month on 20 February.

The fleet is 279 ships strong, with 127 ships underway, 46 percent of the fleet. There are 332,800 Active Duty, 70,600 Reserve, and 177,600 civilians serving in the Navy. Beginning in the eastern Atlantic, George Washington is preparing for future deployment to Japan while the Nassau Expeditionary Strike Group is under way to start its deployment. Crommelin, Simpson, Steven W. Groves, and Navy P–3s are conducting counternarcotics operations in the Caribbean and eastern Pacific.

In the European theater, Cole is operating in the Mediterranean with the British, and San Jacinto is in the Black Sea with NATO in Partnership for Peace Nation navies.

Supporting Africa Partnership Station, Fort McHenry arrives in Cameroon, and HSV–2 Swift is in the Gulf of Guinea. Bainbridge and John L. Hall are on station to support President Bush's visit to the continent.

In the Central Command area of operation supporting Iraqi and Enduring Freedom, carriers *Truman* Carrier Strike Group departs Jabal Ali, and the *Tarawa* Expeditionary Strike Group reenters the Arabian Gulf. Riverine forces are conducting a variety of missions in country, while in the air, Navy airborne ISRS sets are providing critical intelligence to Navy and Special Operations Forces.

On the ground, 14,000 sailors are deployed as individual augmentees. Six Navy-led Provincial Reconstruction Teams in Afghanistan delivered aid and provided reconstruction, while more than 3,000 medical personnel support operations.

Off the east coast of Africa, Carney, Whidbey Island, and Oscar Austin are supporting counter-piracy operations with coalition forces.

In the Pacific theater, *Nimitz* Carrier Strike Group is underway in the western Pacific, providing presence while *Kitty Hawk* undergoes maintenance. *Essex* Expeditionary Strike Group continues exercises with the Republic of Philippines forces. The *USS Ohio* conducts the first ever SSGN foreign port visits to Pusan in the Republic of Korea.

Finally, in the mid-Pacific, Lake Erie launches a modified SM–3 missile, and successfully intercepts and destroys an inoperable satellite containing a toxic hazard.

These are everyday examples of the balance capabilities that the 2009 fiscal year shipbuilding program will provide to meet the challenges the Nation faces with a reasonable degree of risk. The Navy's 313-ship force structure represents the minimum number of ships the Navy requires, the minimum capacity, if you will, to provide global reach, persistent presence, and warfighting effects expected of Navy forces outlined in the National Defense Strategy, the 2006 Quadrennial Defense Review, and the recently signed Maritime Strategy.

I thank you for this opportunity to discuss the Navy's shipbuilding program with you, and look forward to answering your questions.

[The joint prepared statement of Admiral McCullough and Secretary Stiller can be found in the Appendix on page 52.]

Mr. TAYLOR. Thank you, Admiral. I very much appreciate you making us aware of what the Navy does on a daily basis. I regret to say that your statement had nothing to do with the Navy's shipbuilding request. And I guess, because it is so, quite frankly, pitiful, maybe you wouldn't want to talk about it either, because this year's request does not get us to a 313-ship Navy, it doesn't get us anywhere near there. It doesn't address the problems of the past. It doesn't point out a plan for the future, Ms. Stiller.

Now, quite frankly, that comes from the Administration, not from the brass. And, with that, I am going to yield to the Ranking Member, Mr. Bartlett.

Mr. BARTLETT. I think that in his opening statement the chairman outlined pretty concisely the positions of the committee. I would just like to ask you, what are reasonable arguments against his proposed changes to the ship procurement?

Secretary STILLER. Sir, as we formulated the 2009 budget request, we looked to balance across the entirety of the Navy on what we needed to buy. And we think that the 2009 budget represents

buying those needs in an appropriate fashion. We balance the industrial base as we go through these evolutions as well as with the warfighting requirement.

Admiral MCCULLOUGH. I will talk about the LPD–17 discussion. In the shipbuilding plan, there is a statement that the Commandant of the Marine Corps has identified Assault Echelon Amphibious Lift that consists of 11 aviation capable ships, 11 LPD–17 type ships, and 11 LSD–41–49 class ships. And in that portion of the plan, the CNO acknowledges and supports the Commandant's determinations.

When we looked across the portfolio that was required with the funds available in the 2009 budget, I think we have balanced it, not giving one or the other of the programs either a detriment or a plus to the best we could with our requirements.

In the course of trying to meet the Commandant's requirement, we have looked at and proposed extending the estimated service lives of two *Tarawa* class LHAs and two *Austin* class LPDs.

While that does not fully address the Commandant's requirement, given the funding available and the requirements for the entire department, specifically the Navy, we think that is the best balance of capability in the 2009 proposal.

Mr. BARTLETT. When we talk to the people who sail the ships and will have to fight the wars, we ask them about the balance between procuring five more 1000s, which would bring the total to seven, which is little more than a technology demonstration exercise. Contrast that with using the money supplied to keep the 51 line alive and to buy more of those, I think just about everybody we have talked to felt that their warfighting capability would be better if we didn't build the next five 1000s and instead used the money to buy about twice as many 51s.

If you really want to get to a 313-ship Navy, why isn't that the right path to follow?

Admiral MCCULLOUGH. First, sir, I would say I hear the number twice as many DDG–51s as compared to DDG–1000s. I would tell you it is more than the number of five additional ships, but I don't believe it is twice.

The DDG–51 is a very capable ship. That is true. I will tell you the capability that we put in the DDG–1000 with performance in the littoral, both against missile threats and to provide surface fire support, exceeds the capability and the capacity that is resident in the DDG–51.

Secretary STILLER. And I would also add that the fleets do have input as we go through our budget cycle on what the requirements are.

Mr. BARTLETT. With oil at $110 a barrel, why is the Navy pushing back on our requirement to make the future large combatants nuclear, considering not just the cost, the life cycle cost, but the enormous operational advantages you get when you don't have to refuel for another 30 years?

Secretary STILLER. I would tell you, sir, that the Navy is taking seriously the law; and we have included as part of our analysis of alternatives for the CGX to look at nuclear power as an option. And we are in the process of going through those requirement—that analysis of alternatives right now and staffing that.

Admiral MCCULLOUGH. Sir, we fully understand the law and, as Ms. Stiller said, one of the options or alternatives in the AOA is a nuclear powered variant.

When we look at the price of oil and the projected cost of oil for the future and the energy density demands of a ship of that type, nuclear power is very worthy of consideration to put in a ship, understanding what Congress has passed as law.

Mr. BARTLETT. I would just like to reiterate that I don't think that there is any dissension anywhere in this committee with the proposals that the chairman has made in his opening statement. I hope that our mark this year, that our bill this year includes just those recommendations, because I think it is the right way for the Navy to go.

By the way, this is not something that we have concocted up in a vacuum. We have had a number of discussions with the people who sail the ships and will need to fight our wars. And I think that we have a pretty good consensus that what the chairman has proposed in their view would certainly not produce a less capable Navy but would very likely produce a more capable Navy and more quickly get us to the 313-ship line.

We have particular problems with the LCS; and the chairman's question, if you are going to buy two more from the same people that failed or that we thought were going to fail to build the LCS-3 and LCS-4 with the funds appropriated, why do we think that we should buy two more now when we haven't done a down select and when we are going back to the same two contractors?

Secretary STILLER. Sir, I will let Admiral McCullough comment on the requirement, but I will talk to you a little bit about the acquisition strategy and where we were last year when we made the decision to terminate LCS–3 and then later 4.

We tried, as you know, to control costs. We approached both companies to fixed price LCS–3 and 4, and we could not come to an agreement on that, primarily because of where they were in construction. When you look at where LCS–1 and 2 are today, LCS–1 will go on trials this spring and LCS–2 will be launched this spring. So they are quite a bit further along in construction, and so the shipbuilders will have a better sense of what the true cost of the ships are.

And so what we are proposing is the competition for quantity, combining the one ship in 2008 and two in 2009, and add to that competition will be a fixed price competition. So that should balance the exposure that the Department has on those ships. And I do think that the companies will be much more comfortable bidding in a fixed price environment because of where they are in the construction of the two lead ships.

Admiral MCCULLOUGH. As far as the warfighting requirement, the warfighting requirement for LCS has not changed, and none of the warfighting capabilities in the ship have been changed since its inception. We do have a current critical warfighting need, an unfilled gap, if you will, in the area of swarming small boats armed with anti-ship cruise missiles and specifically with anti-access strategies using mines. And LCS brings us those capabilities.

The decision to cancel LCS–3 and 4 was very difficult, and the CNO and the Secretary, Ms. Stiller and I and a multitude of oth-

ers, discussed this at length, understanding that if we canceled the ships, what we were doing to exacerbate the gap, if you will. But based on the performance of the two contractors at that point, it was prudent to cancel those two ships even though it stretched out our ability to procure this capability that we need to fill the warfighting gaps, sir.

Mr. BARTLETT. Mr. Chairman, I would just like to note that if the LCS is going to live up to the anticipations we had for it when it was first proposed to us, we really need to have an at-sea mission package change capability. To do that, we need a medium lift helicopter. The 60 just isn't big enough to do that. And so the present plans are that the LCS will have to leave the fight, steam to port which may be 3 days away, change the mission package, and steam back, so that it could be absent from the fight for a week. That really shouldn't be necessary, it wouldn't be necessary if the Navy had a medium lift helicopter so that the mission package could be changed off with another ship. And I hope, then, that if we are going to proceed with these procurements, that the Navy would be insistent that we have an at-sea change capability. Because if we don't, it really depreciates the effectiveness of the LCS. Does it not?

Admiral MCCULLOUGH. Sir, that was never part of the requirement for LCS to do, and that is the change of mission packages. The thought process here is there would be the appropriate number of mission packages deployed to the forward theaters, and that the combatant commanders with actionable intelligence would appropriately configure those ships to fight the missions that he saw in a potential crisis. And so we have given the capability, the modularity, if you will, with these mission packages to enable any ship to be outfitted with any of the three packages.

And I understand what you are saying about the medium lift helicopter. No, it is true that an H–60 cannot lift the mission package. But that was never the intent, sir.

Mr. BARTLETT. If this is a workaround, then I don't think it should be necessary, because it really will depreciate the flexibility of the LCS and its capabilities in future fights.

Thank you very much, Mr. Chairman.

Mr. TAYLOR. And Admiral McCullough and Ms. Stiller, the ranking member has raised what I think are some very valid concerns. Anyone who has read a history book on the Battle of the Midway knows that one of the things that attributed to the American victory was the Japanese's need to rearm their bombers, and the time it took for them to be on deck as they rearmed from torpedos to land attack. So there is obviously historical precedence for the gentleman's concerns.

What I would ask, and I will also say that three years ago I had never heard of the hogging and sagging calculation, using the Coast Guard screwup on their program. But for the rest of my life, if I don't ask, did someone run a hogging and sagging calculation on this vessel before we build it or modify it, shame on me.

So given that, the gentleman has some very valid concerns. I would ask that you and the Admiral find some time in your schedule between now and markup where you could meet with us and address the gentleman from Maryland's concerns, and see if there is anything we can do up front. Again, we are about finding

vulnerabilities and addressing them before sailors lose their lives needlessly.

Admiral MCCULLOUGH. Yes, sir. We would be happy to.

Mr. TAYLOR. Thank you. With that, the Chair recognizes the gentleman from Connecticut, Mr. Courtney.

Mr. COURTNEY. Thank you, Mr. Chairman. And I want to thank the witnesses again for their testimony. Particularly Secretary Stiller, your positive reviews of the *Virginia* class program is something that I am going to sort of take or interpret as a back-handed compliment to Mr. Taylor and the subcommittee, because we again stepped out of line a little bit from the budget that was submitted last year and passed the $588 million advance procurement because I think we believe in the fact that this is a shipbuilding program that is really hitting all cylinders.

The New Hampshire, which Admiral Ruff has turned the valve on the graving dock a couple weeks ago to flood, is eight months ahead of schedule in terms of delivery, a million fewer man-hours in terms of construction. I mean, clearly, both Northrop Grumman and Electric Boat are again getting the kinks out and creating a much more efficient program. And I guess with that in the context, as Mr. Taylor indicated, the budget, despite the fact that we did a substantial advance procurement last year, again, the request is two ships a year, two subs a year, in 2011.

When I asked Secretary Winter a couple weeks ago why they didn't go to 2010, his answer was that the Navy didn't want to get into a 2–1–2 building schedule. But my recollection is, last year, when industry testified before this committee they actually said that that was a schedule that they could go with. You know, building five over three years instead of four over three years would be better in terms of maintaining the momentum that they are building up and creating, by your own testimony.

So I just wonder if we could again revisit that for a second, and what your thinking was about not going to 2010 with that advance procurement money we appropriated last year.

Secretary STILLER. Yes, sir. First, I would just like to comment. You are absolutely right, the *Virginia* program is doing quite well. But I think that proves what happens when you can get into serial production and actually come down a learning curve. It is a good news story. I could tell you, four years ago when I came into this job, *Virginia* was struggling as well with lead ship issues. So once you get into serial production, that is good.

Now, to address your question, what the Secretary said is exactly what we looked at. We didn't want to get into a 2–1–2 sawtooth type profile, because, as we looked at the industrial base curves we knew we would see hiring and then a dip-down to go back up again, and we thought it best to have a gradual ramp to a steady state.

So I hear that industry said that, but from our analysis we felt it would be prudent to put it in 11, so that, when you went to two, you stayed at two.

Admiral MCCULLOUGH. And, yes, sir. When we looked at the profiles and the workload that Ms. Stiller said, we agreed with that. And, again, it is the best fitted capabilities across the Navy's entire shipbuilding portfolio. We wanted to accelerate the two-a-year pro-

curement of *Virginias.* And when we balanced the risk to the Navy across all our shipbuilding portfolio, 2011 was the right year to put that boat in the program.

Mr. COURTNEY. Well, thank you. Again, I think the overall goal I think we agree on, which is that we want to smooth out the process and keep, again, this momentum of early delivery, which again I think is going to help the Navy with that shortfall in the submarine fleet 15 years out which we have talked about in this committee certainly many times, the CRS witness I think later today may have some thoughts about the 2–1–2 approach, which again we will just sort of keep exploring that.

One other idea that is being discussed, and I am sure you know this, is whether or not, again in the interest of making sure that we don't lose time and waste costs, is whether we can advance in the 2009 budget some funding for early construction of the 2011 second sub this year. And, again, in other words, man-hours would be moved forward into the 2009 budget year, again with the goal of shortening the delivery for that 2011 second sub. And I don't know if you have any thoughts on that or if that is an idea that we can sort of again discuss and hopefully work together on.

Secretary STILLER. I don't know the specifics of the request at this point. We have had advance construction authorization for other ships in the past. We have had it on the big deck amphibs, on the carriers and a couple LPDs a few years ago. And, really, you have to get into the details of how that money would be used and is there a future bill to the Department. We would have to understand that as well. If we advance on one, does that mean we need to advance on all of the rest in the multi-year.

The other comment I would make about this next multi-year—and thank you very much for giving us the authorization for that. That is most helpful. We will need to—the earlier ships in that multi-year are the ships, the boats that we are going to work to get down to the $2 billion savings. So we are doing some nonrecurring engineering in those ships, and so we also want to make sure that we have that time to do that disciplined R&D or design efforts so that we don't have issues in construction. But we have to balance that with advanced construction as well.

Mr. COURTNEY. One last question, Mr. Chairman. The 2009 shipbuilding plan that you submitted, one of the changes in addition to the timeline for the overall fleet is that the SSBN was 14 in the last years and it is down to 12. And I just wonder if you can explain that change.

Admiral MCCULLOUGH. Yes, sir. What we looked at with respect to the ballistic missile submarine replacements is the operational requirements for 12 submarines. And the 14 is based on having to do a midlife refueling of the ballistic missile submarines. And given the advances in reactive technology, I would rather you talk to Admiral McDonald about. We can go to single reactor cores, life of the ship reactor cores. And so since we don't need to refuel the ships at midlife. That is the reason we went from 14 to 12 submarines.

Mr. COURTNEY. We will continue some discussion on that issue. Thank you, Mr. Chairman.

Mr. TAYLOR. The Chair thanks the gentleman.

And without putting any undue pressure on the new gentleman from Tidewater, Virginia, I would just quickly remind you that, in the brief time I have been here, you are following in the footsteps of Owen Pickett, Norm Sisisky, Herb Bateman, and the late Jo Ann Davis. So, now that we have put all that pressure on you, I want to recognize the newest member of our subcommittee, Mr. Wittman.

Mr. WITTMAN. Thank you, Mr. Chairman. It is certainly an honor and a privilege to be part of this committee. And I begin a question for Deputy Secretary Stiller. This is going to be more general in scope.

The Congressional Budget Office estimated the Navy's 30-year shipbuilding plan costs at about $22 billion a year, and the Navy estimated its cost at $14 billion. And that is in fiscal year 2007 dollars. Obviously, there is a large disparity between CBO's cost estimates and the Navy's cost estimates. And my question is twofold.

One is, is there going to be an effort to reconcile that and make sure that those estimates are closer to what we would consider to be realistic? And, since $12 billion will only buy seven ships, do you believe that the CBO's budget estimate is more realistic than the Department of Navy's?

Secretary STILLER. I would answer that I believe the Navy's estimate is more accurate. We have certainly had good dialogue with Dr. Labs and CBO. And some of our assumptions are just different, and so that is where you see the disparity.

We have done a very hard scrub over the last several years to make sure that our cost estimates are more realistic, and you have seen that migrate over time. We look at material escalation over time. And we don't just accept indices that are given to us; we look at it specifically in the shipbuilding sector, and we use those to budget. We understand man-hours to build ships; we understand density factors in ships. And, for example, on DDG–1000, we made a conscious decision in the design to make it more producible, to make the spaces more open and less densely packed, because we know that drives costs. And so those kinds of assumptions are factored into our estimates, as well as the historical information that we have from ship construction for many, many years.

Mr. WITTMAN. Thank you. A question concerning the LCS program. You have previously stated that procurement of additional LCS ships for the operational evaluation of LCS–1 and 2 is necessary in order to fulfill urgent operational needs, such as mine warfare in the littorals. As well, the Navy has argued against cuts to the mission modules, despite the fact that the number of LCS seaframes has been reduced, citing your ability to use the systems contained in the mission modules on other platforms. Can you tell me what funds are included in the fiscal year 2009 budget to test and integrate these mission systems into alternative platforms as a plan B in case the LCS program continues to experience difficulties? If there are none, how can you assert that these capabilities are urgently needed?

Admiral MCCULLOUGH. First, sir, there is no R&D money or OPM money to place the mission modules on other platforms. That said, there are—and I will correct this number if I get it wrong—there are about five DDG–51 class ships that can deploy the re-

mote mine hunting vehicle that is a part of the mine mission module.

When we were working through the capability concerning airborne mine countermeasures, originally that was envisioned to deploy on an aircraft carrier. So there is a potential to put that capability on an aircraft carrier and carry it to a forward theater.

I caution that, because if you put airborne mine countermeasures capability on the aircraft carrier, you are impacting the footprint of the other helicopters that go on the aircraft carrier.

So while we don't have any money in the program to put that capability on other ships, the ability exists to put portions of the mine mission module on other platforms.

Mr. WITTMAN. Thank you, Mr. Chairman.

Mr. TAYLOR. The Chair thanks the gentleman.

The Chair now recognizes the gentleman from Washington State, Mr. Larsen.

Mr. LARSEN. Thank you.

Secretary Stiller, you mentioned in response to Mr. Courtney's question regarding serial productions, once you get into serial production costs come down. As it applies to DDG–1000, are we planning enough DDG–1000s to get into what you would call serial production if we are only doing seven? How can we get that cost to come down if we are only doing seven?

Secretary STILLER. We do expect to see some learning as we go along, and that has been factored in as we priced the ships. So, yes, sir, you will see some learning on even seven ships.

Mr. LARSEN. Even on seven ships?

Secretary STILLER. Yes, sir.

Mr. LARSEN. And then we will end the program just in time to start on something else, it seems.

Secretary STILLER. Well, sir, it also depends on the way forward. We talked about CGX. And so there may be technologies that migrate from DDG–1000 into the new platform, and so those skill sets would be retained for CGX as well. That is a possibility.

Mr. LARSEN. And I think one of the concerns you are hearing is a lot of possibilities and not hearing enough about probabilities and programs that we are having a lot of problems with.

Secretary STILLER. I would say on DDG–1000, the program has been running extremely well, all the development that we have been doing to get up to the contract that we just signed about a month ago. We have been on cost and schedule for the software development and for the detail design effort that has been ongoing at both shipyards. This program has been around for a long time, about 10 years, and we have done a lot of risk reduction to ensure that the technologies that go into the ship are proven and that we know what we are getting. Now, integrating them will still be a challenge, and I am not going to minimize that.

The good news on DDG–1000 as well is we will be 85 percent complete with design before construction starts this August, and that is comparable to what we saw on *Virginia* class, and that was a very good news story from a rework perspective. I am very optimistic there. LCS, we only saw about 25 percent of the design done.

Mr. LARSEN. So we recently entered into construction contracts for the first two 1000s. So are you confident we can build these ships to the funding you requested then?

Secretary STILLER. Sir, I will tell you, lead ships are hard. I am not going to give you an absolute, but I feel very comfortable with the contracts that we have signed with industry. I think industry would tell you they are comfortable or they would not have signed the contracts. So, right now, with the design being 85 percent complete when we start construction, we should have rework minimized. I won't say there won't be an oops somewhere later on, but right now I feel very comfortable with where we are.

Mr. LARSEN. I appreciate that. And you can understand the skepticism on this side of the dais. But you placed these ships under contract, the actual construction starts are still months away. Are you confident that you can execute the third ship that is requested in the fiscal year 2009 budget?

Secretary STILLER. Yes, sir, we are. The dual lead ships were actually counted in 2007, and the design effort was continuing as we negotiated the contract for the construction piece. We knew we had to do the design to be ready to start construction. So I think, yes, we will know where the design is. We will also have return data. One of the things that we had authorized the yards to do was to each take a complex part of the machinery spaces that the other guy designed, build it, and so those will deliver in August and later, I think it is December, respectively. And that will be to prove out that the digits, the steel to show that the design tool is producible at the corresponding yards.

So I think that that is going to be a good news story for us. That construction on those modules is going quite well right now.

Mr. LARSEN. We may have some follow-up there.

Admiral McCullough, as CNO and you as well, stated, in general, that 10 operationally available aircraft carriers are too few, and we want to have a minimum of 11. You stated that you have taken steps to mitigate the 10-carrier period that would be created starting in fiscal year 2013, should the *Enterprise* be retired, but that you will struggle to meet the deployment needs if that time period extends beyond 33 months or so.

Should the CVN–78 deliver on schedule, there will be a 32-month gap between the retirement of the *Enterprise* and delivery of the *Ford*. Moreover, according to the December 2006 DOD report on the *Ford's* progress, there is some indication the *Ford* wouldn't reach initial operation capability until September 2016, which would result in an operational availability of 45 months.

Given that this 45-month or more gap is possible, and seemingly probable according to the DOD report, what steps is the Navy taking to ensure that it can continue to meet deployment needs with a 10-carrier Navy over an additional 12 months?

Admiral MCCULLOUGH. Yes, sir. Thank you for the question. One thing we have done is we have mitigated the potential of going to 10 aircraft carriers or the period of going to 10 aircraft carriers between the delivery of the *Ford* in fiscal year 2015 and decommissioning of the *Enterprise* or inactivation of the *Enterprise* at the beginning of fiscal year 2013 by, one, moving *Roosevelt's* complex refuel and overhaul into fiscal year 2009 and as part of our fiscal

year 2009 request to Congress. That gains two months of operational availability of that ship by moving it into 2009.

Mr. LARSEN. On the back end?

Admiral MCCULLOUGH. On the back end. The other thing that we have done, is there is a lean initiative to combine the post shakedown availabilities with either the refueling overhauls or the new construction build period that results in approximately five months of additional operational availability. So when you couple those two things together, in the case of *Roosevelt,* we gain seven months of operational availability.

We have also looked at PIA's carrier maintenance availabilities that would occur in that gap time, and have moved some of them to the right so that we will be able to meet an annualized six-plus-one FRP capability for the aircraft carrier fleet.

The *Enterprise* is a tough problem. I was the engineer on that ship for 26 months back in the 1995 to 1997 time frame, and it is like the infrastructure in your house; you know, once she gets old, she's old. And, also, I would tell you that the power plants, much more complex than the ones we have today.

Why am I telling you all this? If we put *Enterprise* in a maintenance availability in the beginning of fiscal year 2013 to extend her to maintain the 11 aircraft carriers, that would cost us about over $1 billion in maintenance. And then, when I look at the ops and the personnel costs, it is about $2.2 billion to extend her. We would get one more deployment out of that ship after that time period.

It also significantly impacts the complex refuel and overhauls of the *Nimitz* class carriers, specifically *Lincoln.* And when *Lincoln* comes home in that time frame, if she doesn't go in when she is supposed to, she has no acebow whatsoever and she will have to remain in port, if you will, until we can get *Enterprise* out. And that subsequently delays every complex refuel and overhaul.

So any acebow we gain by putting *Enterprise* in another availability is just overwhelmingly consumed and puts us in a negative acebow by the follow-on effects to the refuel and overhauls of the other aircraft carriers.

Mr. LARSEN. Can you clarify? On the description you just gave, it assumes still a 33-month gap. It doesn't address the potential additional 12 months.

Admiral MCCULLOUGH. Well, when we worked the 78 issue, part of the ability to mitigate from 45 to 33 months is that lean initiative that I spoke about. So you get some time back. So I think for a short period of time—and I consider 33 months, 3 years, a relatively short period of time—that we have worked hard to ensure we have the operational availability to carrier force, which is COCOM's requirements. Long term, we cannot do that. The minimum number of operational aircraft carriers we need in the carrier force is 11.

Mr. LARSEN. And just if I may, Mr. Chair.

Mr. TAYLOR. Certainly.

Mr. LARSEN. You mentioned the *Lincoln* and presumably there is other folks coming in for—other ships coming in for overhaul. So you are saying if you do this, you can maintain your schedule for the overhauls on any of the other *Nimitz* class carriers that are coming in, the schedule that you have laid out?

Admiral MCCULLOUGH. What I am trying to address, sir, is there is only one drydock where they can do this work. And if you put *Enterprise* in it, *Lincoln* can't go in to do what she needs to do. So she is delayed and then every subsequent complex refuel and overhaul is delayed. Additionally, once *Enterprise* came home from this other deployment, she doesn't have the availability to deploy again. And I can talk to you about that off line. And I can't get her into dock for another four or so years to get her inactivated. So I have no acebow for that ship during that time period. But because it a nuclear powered warship, I have got to maintain the crew on it. So now I have got a cost extending that ship and I have no operational availability out of it.

Mr. LARSEN. Well, maybe after our break, two weeks in—coming back in early April, maybe you and I can talk about that.

Admiral MCCULLOUGH. Yes, sir, I would be happy to do that.

Mr. LARSEN. Thank you. Thank you, Mr. Chairman.

Mr. TAYLOR. The Chair thanks the gentleman from Washington. The Chair now recognizes in the order of people who were here at the time of the gavel, the gentleman from Pennsylvania, Admiral Sestak.

Mr. SESTAK. Thanks, Mr. Chairman. I wanted to ask about the 30-year shipbuilding plan. Last year it came in at—the 2008 plan at $16 billion a year. I think the Congressional Budget Office had assumed it was going to be $22 billion a year. But you said we could do the $16 billion a year if we made sure that—even assuming that there is no real growth in the top line, that R&D—which hasn't happened—that R&D would decline, but this year it has gone up, that any personnel costs would be offset by a decrease in personnel. What has changed that in one year you have gone from $16 billion to $22 billion?

Admiral MCCULLOUGH. Sir, I will talk to that a little bit. The original plan that we submitted had the shipbuilding costs at $13.4 billion a year in 2005 dollars. It escalated to 2007. That is about $14.4 billion. Over the course of the last year as we developed the plans submitted with the budget this year, as Ms. Stiller talked to, we looked at inflation specifically with materials that are associated with building ships and compared that to what DOD mandated is our inflation line. And it is higher, the actual inflation is higher. And so——

Mr. SESTAK. So one reason is inflation. What are the other reasons, Admiral?

Admiral MCCULLOUGH. That is what drove——

Mr. SESTAK. But inflation hasn't been 40 percent.

Admiral MCCULLOUGH. No, sir. But in our plan, what we say the 2007 dollars would be to execute our plan is $15.8 billion. So in comparison, if you put in 2007 dollars to 2007 dollars——

Mr. SESTAK. My dollars were in 2008 dollars. So the 2008 was 16 to 22. You are getting 11 billion, 12 billion today, correct?

Secretary STILLER. We only have the 2007 figures in front of us. We can escalate that for you for the record.

Mr. SESTAK. Would you agree it is a pretty significant increase? It is 19 percent for the first 5 or 6 years. But after that over the whole 30 years, you agree it is about a 40 percent increase?

Admiral MCCULLOUGH. What I say, sir, and the reason we broke the plan down into near term and far term in this particular plan is the near term being through 2020.

Mr. SESTAK. The near term, I will buy that. It is about 19 percent. The long term is about 40 percent.

Admiral MCCULLOUGH. We think we have a reasonable handle on it. Outside of 2020, you have things like the ballistic missile submarine recap, the DDG–51 recap and the other platforms. We don't really know what those are.

Mr. SESTAK. I have got your point.

Admiral MCCULLOUGH. Yes, sir, I agree.

Mr. SESTAK. The reason I was curious was a couple. Last year, Ms. Secretary, you had talked very well about corporate ways you have been working with all the industry to leverage material buys and workload sharing. I had asked for a copy of those meetings and I haven't gotten them yet. If you could, I really would very much appreciate them. And the reason it was is I was just curious how that all is resolved in meetings you have gone through and the list of the formal meetings that you have had. Why weren't the SSBNs in the——

Admiral MCCULLOUGH. Why didn't we include——

Mr. SESTAK. Why didn't you have SSBNs in your 30-year shipbuilding plan? Because that will rachet up the cost a lot more.

Admiral MCCULLOUGH. I agree it will put significant pressure on the account. We didn't include them because we are still going through the initial definition of what that capability is.

Mr. SESTAK. But there is other ships in there you are going through the initial, CG(X)——

Admiral MCCULLOUGH. CG(X) is a more near term. We don't know what the ballistic missile submarine replacement is going to be. So any wedge I put in there would have been a guess.

Mr. SESTAK. My next question has to do with NSDF funds. You probably saw I asked the Secretary that question. Should we be having an LHA $3.5 billion warfighting ship in—national ship—NDS—I have forgotten. The reason I ask is you nippered money back and forth between—you know, we gave you a 12th—11th LKA—ET-AKE last year. You have come back and asked for the 11th again. And you took that money and paid off some contracts for the previous ships. So if you put a ship into the national ship—what is it called again?

Secretary STILLER. National Defense Shipbuilding Fund.

Mr. SESTAK. National Defense Shipbuilding Fund. You don't have to come back to Congress to ask to move money around. And so my question is should we understand that maybe with T-AKEs—but why put an LAH or—into the—$3.5 billion ship into that?

Secretary STILLER. Yes, sir. 10 USC 2218 defines DOD sealift vessels. And in that statute, maritime prepositioning ships are included. So our—but that TLHA——

Mr. SESTAK. But that could mean you could call an aircraft carrier a maritime prepositioning ship and you could put it over—if I follow your line of reasoning, you have taken LHA and now said I am now going to designate it as a maritime prepositioning ship. You could theoretically call the next aircraft carrier a maritime

prepositioning ship and it could fit under that description you just gave me. Am I wrong?

Secretary STILLER. I am going to answer it a different way, sir. I am not going to say you are wrong. The MPF(F) aviation ship we have in the budget does not include all the warfighting capability that you would get in an assault echelon ship.

Mr. SESTAK. Could you give me the differences later?

Secretary STILLER. Yes, sir, I would be happy to. So that is why it was considered preposition. On the T-AKE——

Mr. SESTAK. My memory of it, it is not very much different. But anyway, let me just move on. Why didn't you put the money for the cost overruns of the contracts of the T-AKE under the completion of prior year shipbuilding line? Shouldn't you have done that to highlight it to Congress that these were overruns?

Secretary STILLER. Legally, as we looked at it, you are right. The NDSF is a revolving fund. And we have the flexibility. We did—before we made the decision to enter into this contract negotiations, we did brief the staff, both on this committee and on the appropriations committee because we wanted to make sure everybody knew what we were——

Mr. SESTAK. But shouldn't you put it into the Congress line?

Secretary STILLER. No, sir. The prior completion line is specifically SCN funded and the National Defense Sealift Fund doesn't have a prior completion line. The flexibility of the account allows you——

Mr. SESTAK. Allows you to do that?

Secretary STILLER. Yes, sir.

Mr. SESTAK. Ms. Stiller, the reason I ask these questions is I honestly believe you all do great work over there. But you approximately get $11 billion today for shipbuilding. You are asking to increase your budget 50 percent almost, or half, to afford the shipbuilding plan of the future. And it just seems to me that that type of flexibility or the ability to know what you are working with industry on and the ability to have—you know, if there is differences, if there is a $3.5 billion ship which I see no differences in this fund and is less transparent than it might be of how money is utilized by Congress, it seems to me there really has to be some effort of which you spoke about last time of trying to manage better, be 100 percent over cost. Because Navy traditionally has only been 5 percent of its shipbuilding over cost on ships. Now you are upwards of 100 percent on LCS and LPD–7 and you can go on down the line, DDG–100. It just seems to me the more transparency rather than this flexibility and the more openness of working together with Congress, the industry and you could help a lot. You are at 50 percent increase almost in shipbuilding money, that is a lot at a tough time.

Thank you very much.

Mr. TAYLOR. The Chair thanks the gentleman for a really excellent line of questioning. And I would encourage the gentleman from Pennsylvania to follow up his line of questioning with some language requesting the committee staff that would close that loophole so that when we as a committee fund a ship, direct the Navy to build a ship, that we don't discover a year later that those funds have gone for something other than what we thought the law said.

So I very much appreciate you bringing this to the committee's attention. I would encourage you to follow up on that.

With that, I would like to recognize the gentleman from Indiana, Mr. Ellsworth.

Mr. ELLSWORTH. Thank you, Mr. Chairman. You can breathe a sigh of relief. The former admiral took all my questions word for word. It is amazing how—he must have looked at my notes. I will be a little less specific.

A, I would like to associate my comments with the chairman and the ranking member on the importance of moving toward that nuclear fleet. I think that is so important, anything we can do to move toward that. And, Secretary, I also appreciate your comments through this whole thing about watching the dime on all of these projects. We sink a lot of money—and this committee and the Armed Services Committee and I think the public want a strong armed services and don't mind spending money there. But they do want that money spent wisely. And I appreciate that you do look at that.

Could you touch on for me—not being a former Admiral. I have been involved in some building building but not shipbuilding. And when you talk about the 85 percent design, and I think you said some are even started with 25 percent of the design done, can you explore that a little bit for me and how that runs into the cost of this? I am just getting pictures of—getting the hull down and then starting—that is kind of foreign to me of how that works and what kind of cost overruns are because of that. Is that just the way this has to be, that we can't design this until we are into this and building up? If you could help me just explore that for a new member.

Secretary STILLER. Certainly. We do what we call concept designs where you roughly know what the ship's displacement is going to be and what kind of propulsion plan and weapon systems you are going to have, and then you go into what I call detailed design, where you put the attributes in there, you run the pipe, you run the electrical, you design the space. And we start that with the keel up, because that is how we build the ships. And so when I say 85 percent of the design is done when we start on DDG–1000, start construction, almost every single space will have been touched at least to—but all of the spaces—we won't start construction on a space that isn't totally detail designed and turned over for production. We have learned this over time and the CATIA design tools that we employ, that our shipyards employ when they are designing, having really helped us. We have learned that you want to be significantly far along in design and 85 percent complete seems to be about the right metric.

We saw really good results on *Virginia. Seawolf,* when she started construction, was only about 47 percent complete in design. So what you see is the rework go down. We had over 68,000 changes on the *Seawolf* class. We had less than 25,000 on *Virginia* class. So you do learn a lot when you can get the design products complete before you start fab. But you won't—the way we set it up on DDG–1000 is they won't start physically constructing a space that isn't completely designed. And so they will build from the keel up.

Mr. ELLSWORTH. Thank you very much. Like I said, Mr. Chairman, most of my questions were answered by Mr. Wittman or asked by that. So I will yield back. Thank you.

Mr. TAYLOR. The Chair thanks the gentleman. Ms. Stiller, let me begin by giving credit where credit is due. I want to thank Captain Will Ebbs, who is the Chief of Staff for this subcommittee. Great help on that opening statement. And really getting to the point of another program. I can continue—this is my editorial comment to see the lingering effects of a former Secretary of Defense, who I thought during his tenure short-changed the United States Navy. And I think the short-changing of the United States Navy continues even in his absence. So one of the things that we had hoped to accomplish in changing the name of this subcommittee back to its traditional name of Seapower is to lay out a marker. It is not about the incremental use of naval power, it is about seapower. It is about the use of overwhelming force. It is about having a Navy so strong that any peer opponent would think not once or twice, just come to the conclusion that they don't want to start a war that involves the United States Navy.

What we see is a budget request that calls for the incremental use of force. And I think we have discovered the hard way in Iraq just as we—as the Nation sadly learned in Vietnam, that is not a good way to go to war. You say all the right things, but you don't follow it up with your budget. We don't appear to have learned the lessons of the OCS program.

Already Mr. O'Rourke is going to testify later that you—and I am talking about the administrative end of the Department of Defense—you still can't point to any number and tell me that is what the DDG–1000 is going to cost. That is not a safe way to go into a program. You would think we had learned from the LCS. And in recent weeks, some very senior Navy, officials speaking off the record, have posed to me a question that I am going to pose to you. Their question to me was how would I feel and how did I think this committee would feel if they terminated the DDG–1000 program and two, took the funds that would have gone to the DDG–1000 program and built additional DDG–51s, a program that has been very successful that to date I can't remember a single enlisted or uniformed officer of the United States Navy saying anything detrimental about that platform. We get the economies of scale of having built now well over 50 of these platforms, a known supplier base. And as we have all learned and Mr. Wittman is going to learn, the best value you get in any program is the last year you built, not the first year you built.

So having not invented this thought, but actually having some people that I greatly respect pose the question to me, my question to you is how quickly could you in your capacity meet with our Nation's supplier base, pose that question? What kind of price and what kind of availability would be for a multiyear of additional DDG–51s should this Nation make the decision in this year's authorization bill—the House and the Senate would have to concur and the appropriators would certainly have to concur. What kind of price, what kind of delivery could we have for additional 51s in lieu of DDG–1000s? I would also—since I am guessing there are industry representatives in this room—welcome them to contact the

committee directly. But, again, we don't sign contracts. You do. But I think it is a question that was—I am glad someone asked it. I think it is worth pursuing.

I very much appreciate the Commander in Chief of the Pacific Command for his forthright answer before the committee when asked if given the option of a couple of 1000s or five DDG–51s. Some concerns have been raised about how best we can make the transition from this program, the existing programs, to the nuclear cruisers. Admiral McCullough gave Mr. Bartlett and I, I thought, an excellent briefing on some of the challenges associated with trying to take some of those new platforms and put them on the DDG–51 hull. I greatly appreciate your time in walking us through it.

But as far as getting our Nation to a fleet of 313 ships, getting the best return on the taxpayer's dollar, I have got to believe that that proposal makes a lot of sense. So I would welcome—I have now laid that out in front of you. I would like to hear your thoughts on it.

Second, going to the Admirals. Again, very astute observations on the enormous cost and the limited return of refueling the *Enterprise* in the fairly new future, a future that we have to address. I would also say to you, Ms. Stiller, and whoever—you know, again I hope that the next—I think you do a good job. I would hope that the next Administration would be smart enough to let you continue in your job. Neither one of us know that that is going to happen, but I have said that.

Secretary STILLER. Thank you.

Mr. TAYLOR. But when that challenge comes down the line, I would think if you in your capacity approached this committee with an all-or-nothing approach of saying I want to go to a 11 carrier task force—I am sorry—to 10, from 11 to 10, I would think you would meet a very poor response. On the other hand, if you were to approach this subcommittee—and I can't speak for the appropriators—and say for the—anywhere from $2 billion that I have heard from some senior Navy officials to the 1 billion that I have heard from the Admiral today, that we would spend to get an additional 7 months out of the *Enterprise,* if I could have that money to purchase an additional nuclear powered submarine, if I could have that money to purchase an additional amphibious assault ship, if I could have that money to get started on the nuclear cruiser program, I would believe that you would find a much more favorable response from the people who have to answer to the moms and dads of those sailors. I think it is fairly easy for us to say we could either have 7 months out of a carrier or 30 years out of one of those platforms which gets us closer to our 313-ship Navy.

So having thrown those two very real scenarios that I hope this subcommittee will talk about between now and our May markup, I would like to hear your thoughts on that. And if you are not comfortable about talking about it today, I would more than welcome your thoughts between now and markup. Let me also say that I am not opposed to—and again I can only speak for the subcommittee—but I am not opposed to proposing to the subcommittee some either/or options for funding. No one was more frustrated. And with what I thought was an excellent committee mark last year, the Ad-

ministration only asked for 7, this committee funded 10 vessels only to have it get a heck of a lot closer to the President's 7 at the end of the day, including to the best of my knowledge on the day that the conference report was signed, to have the Secretary of the Navy actually pull one of the ships that we just put in the budget out of the budget. And I don't want to see that happen again. It takes a whole year for Congress to fix a mistake like that. And quite frankly I don't want to see that again.

So I would be willing to work with Secretary Winter and the Navy brass to propose some either/or funding options so that we don't find ourself in that situation to where if a program that is in the bill for some reason needs to be canceled, that we do something else worthwhile for the Navy fleet with those funds rather than waiting a whole year to correct that.

So three things I have tossed out at you. We have got to do better. And the keyword is "we." And Congress wants to do our part, but we certainly cannot keep repeating the mistakes of the LCS program, which is the Navy program, the Coast Guard problems with stretching the 110s to 123s. The track record recently is not very good.

Secretary STILLER. Okay. I will start with the DDG–1000/DDG–51 question. The current program on record for the DDG–1000 is 7 ships. And I articulated our acquisition strategy way forward. The DDG–51 program is 62 ships. The last multiyear contract was awarded in fiscal year 2002 and the last ships were appropriated and awarded in fiscal year 2005. So as you talked about consulting industry and the vendors, I absolutely think we would have to do that to have a really good sense of what the true cost of a DDG–51 if you bought one, say, in 2009 because the—and I worry not as much with the shipbuilders because they are still building. I am worried more about the vendor base because a lot of that economic order quantity for those ships was bought in 2002. And so those vendors have poised to be ready for DDG–1000 and other platforms or—could they restart their lines? That is the question I have got to go answer.

Mr. TAYLOR. To that point, which is an excellent point, which subcontractors in particular do you worry about?

Secretary STILLER. Reduction gear for the DDGs come right out—any of the lead long items, the propulsion plant and others—they may say there is not an issue, but I would want to go and make sure that we scrub that. Because the last thing I want to do is say it is this cost and then I come back later and say, no, it wasn't, it was more.

Mr. TAYLOR. And, again, I very much appreciate you bringing that to the subcommittee's attention. So what I would ask of you in turn is to contact those subcontractors about a realistic period of time of one month from today, that you report back to the subcommittee on the availability and what price changes we could anticipate if that was the case.

Secretary STILLER. Yes, sir.

Mr. TAYLOR. Okay. Please continue.

Secretary STILLER. Okay. I am happy to continue the dialogue on this. On the *Enterprise* question, as Admiral McCullough pointed out, it is a billion dollars to do the availability, but there is another

bill to keep the infrastructure to support *Enterprise*. So the total bill is about $2.2 billion, and that is a bill to the Department. It is not currently programmed. And so for me to say what would I buy with it, I don't even know that—that money doesn't exist today. That would be over the shipbuilding budget today.

Mr. TAYLOR. But, Ms. Stiller, again—and I have already laid out that I thought the next Administration would be very wise to keep you around. So it is at the moment your responsibility to fund that ship. The Navy would have to find funding sources within their budget to fund that ship. So given that, to use the vernacular, the monkey is on your back to find that $2 billion. If it is the intention of the United States Navy to come before this subcommittee and the other appropriate subcommittees and say we would like to go to 10 instead of 11, I would strongly recommend that given that you have already got the responsibility of identifying $2 billion, of approaching this subcommittee with an option of what else you could do for that. Because if all of us are in agreement that we need to get to a 313-ship Navy, if all of us are in agreement that we need to do something different and better than what we have been doing, I would think that that idea falls into that category.

Secretary STILLER. Well, we will take that one for the record. I will work with Admiral McCullough on that.

Mr. TAYLOR. Mr. Bartlett.

Mr. BARTLETT. Thank you very much for your testimony. Thank you, Mr. Chairman.

Mr. TAYLOR. Admiral Sestak, do you have any follow-up questions?

Mr. SESTAK. Just one. If you do—if I heard that correctly, Mr. Chairman, if there is to be this effort to analyze—which I think is a great thing to look at, DDG, you know, the continuous, could I ask them maybe to throw one more into the mix that they might—Ms. Stiller, how many DDGs are you building right now?

Secretary STILLER. A total class of 62.

Mr. SESTAK. I am sorry. DDG–1000.

Secretary STILLER. Seven.

Mr. SESTAK. So if you are building seven of these and if you work through the rotation for the Persian Gulf, that means you could keep one of those seven ships forward at any one time. It takes seven to——

Admiral MCCULLOUGH. The way we looked at this, sir, was——

Mr. SESTAK. You could do it differently. You could put four of them in Japan if you wanted to or whatever.

Admiral MCCULLOUGH. Well, we have got them with DSG requirements, with the expeditionary structure——

Mr. SESTAK. So if one expeditionary strike group is—let's just say you want to keep it in the Persian Gulf, it will be one ship at all times in the Gulf. So we are building seven ships to keep one or two forward at $3.5 billion a piece. Some people have looked at the DDG–1000 as a bridge to CG(X). There is another thing to look at. Is having the DDG–1000 become more immediately a CG(X). It may not be the dream of the final CG(X) as you get into all the different worlds of what might be. But if you took your Aegis—and the analysis might show you that if you net the Aegis with enough volume on that radar of the DDG maybe by the third one—you

know what I am talking about—is maybe you could have the third one be a CG(X). It might be enough decibels netted with your whole—all the other Aegis ships to give you practically the same capability as when CG(X) final comes out in 2018. So my only thing is if you are keeping one of these shooters forward of the seven, might it be better for us to go to CG(X) more immediately even though it isn't the final full volume of radar if you analyze all the Aegis netted together with it?

Admiral MCCULLOUGH. Sir——

Mr. SESTAK. I am not arguing pros or cons, but if there is analysis that might be——

Admiral MCCULLOUGH. I have got detailed analysis, some of it I shared with the chairman and the ranking member on Wednesday, that I would be happy to come talk to you about that addresses that.

Mr. SESTAK. Is it classified?

Admiral MCCULLOUGH. Yes.

Mr. TAYLOR. If I may, Admiral Sestak, I would ask the Admiral—I appreciate him meeting with the ranking member and myself—to make that available to any member of the subcommittee or full committee that would like to attend.

Admiral MCCULLOUGH. Yes, sir. I would be happy to do that.

Mr. TAYLOR. Please continue.

Mr. SESTAK. I am sorry. That was it. I have just been taken where we started with 32, I think, of these DDG–1000s. We are down to seven now. And it has got a great gun and all, but I just didn't know if we could leap or something, although I would like to see what the other analysis——

Mr. TAYLOR. Admiral, one last question that I would have for the record.

Admiral MCCULLOUGH. Sir.

Mr. TAYLOR. What other platforms could the gun that is envisioned for the DDG–1000, what other platforms would be applicable? And if you are not comfortable now, that—either existing platforms or future platforms that are contemplated.

Admiral MCCULLOUGH. Sir, I will tell you we looked at could you put the advanced gun system in an Arleigh Burke hull. And without doing the detailed shock analysis on it, I will tell you fiscally it fits. We would have to do some arrangement changes in it, but you can put the gun in there. My concern is the magazine capacity. Outside of that, we haven't looked at putting it in any other hull form. So I would get back to you on that.

Mr. TAYLOR. Thank you very much. The Chair recognizes Mr. Wittman.

Mr. WITTMAN. Thank you, Mr. Chairman. Just another follow-up question on this 11-carrier capability. If you look a little bit further out into the future, you would see that the *Kitty Hawk* is scheduled to be decommissioned in November of 2008. And the plan is, I believe, to have CVN–77 the *George H.W. Bush* to replace that and that is set to be commissioned in 2009. It leaves us back in a period of—a 10-carrier fleet. Are there plans in the works to extend the deployment of the *Kitty Hawk?* And if not, what are the plans there to make sure that we are at 11 carriers versus 10?

Admiral MCCULLOUGH. First, sir, the replacement for *Kitty Hawk* in Japan is the *George Washington 73.* We look at *Kitty Hawk*—and to be honest with you, sir, she is about the same age as the *Enterprise,* maybe 6 months older than *Enterprise.* And we have the same issues with fender bases and material condition and the difficulty of maintaining those ships operationally ready on that particular ship that we do on the *Enterprise.* So the current plan is *Kitty Hawk* comes home and is decommissioned. Her numerical replacement, if you will, is the *Bush.* And so given when she decommissions and when *Bush* commissions, we have worked hard to make sure we maintain the 11 carriers so that we don't take *Kitty Hawk* off line before we have *Bush* commissioned.

Mr. TAYLOR. Are there any additional questions for this panel? Okay. So with that in mind, Secretary Stiller, thank you for being here. Admiral, thank you for being here. We are going to relieve you of this duty for the moment. And we would also like to remind Mr. O'Rourke and the next panel that since we have two votes and since it is about lunchtime, it would be my recommendation to the subcommittee that we break until 12:15. If there are no objections, we will be back at 12:15 for the second panel.

[Whereupon, at 11:36 a.m., the subcommittee recessed, to reconvene at 12:15 p.m., the same day.]

Mr. TAYLOR. All right. I apologize for the absence of a number of members between the vote of FISA on the floor and some other subcommittees meeting. But we do want to welcome our second panel, Mr. Ron O'Rourke, the Assistant—I am sorry—the Specialist in Naval Affairs for the Congressional Research Service; Mr. Eric Labs, the Senior Analyst with the Congressional Budget Office.

Again, the full committee chairman normally limits his witnesses to five minutes. But I think we have the luxury of giving you whatever time you deem necessary. It is my understanding that there is an hour's debate on the FISA bill. So if you could kind of keep that in mind. And the Chair recognizes Mr. O'Rourke.

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

Mr. O'ROURKE. Chairman Taylor and distinguished members of the subcommittee, thank you for the opportunity to testify today on these programs. With your permission, I would like to submit my statement for the record and summarize it for you briefly.

Mr. TAYLOR. Without objection.

Mr. O'ROURKE. The Navy this year has increased by about 40 percent in real terms its estimated cost for implementing the 30-year shipbuilding plan. This increase is so large that the Navy no longer appears to have a clearly identifiable announced strategy for raising the shipbuilding funds needed to execute the plan. The Navy's ship recapitalization financing challenge appears broadly similar in scope to the Air Force's aircraft recapitalization challenge. But while the Navy and the Air Force may be similar in terms of facing major recapitalization financing challenges, the two services are strikingly different in terms of how they are responding to that situation. The Air Force is responding by stating directly and repeatedly that the Air Force budget needs to be increased by about $20 billion a year in the next 5 years. The Navy

in contrast studiously avoided asking for an increase to its programmed budget in recent years. If one service is vocal about the need for a budget increase while the other is not, policymakers could develop an unbalanced understanding of the relative funding needs of two services.

Regarding amphibious ships, the lack of a 10th LPD–17 in the plan has been mentioned. The 313-ship plan calls for 10 LPDs, LPD–17s, and the Marine Corps says a force with 11 LPD–17s is needed to meet the 2.0 MEB lift goal. As detailed in my statement, the Marine Corps calculates that the amphibious force that would be maintained under the 30-year plan would fall significantly short of meeting this goal.

The Navy has scheduled for fiscal year 2011 the additional *Virginia* class boat that Congress began to fund last year. This additional boat will mitigate the projected attacks of marine shortfall. Congress has the option of accelerating the full funding of this additional boat to fiscal year 2010 or fiscal year 2009. The main purpose in doing this would not be to bring that boat into service sooner, but to make a space in the fiscal year 2011 budget to fund another additional submarine, which would further mitigate the shortfall.

And in that connection, we had more discussion this morning about the 2–1–2 profile that might result, for example, if you took that boat and accelerated it into the fiscal year 2010 time frame. The Navy argued last year and has argued now again this year that that kind of profile would perturbable the industrial base. I provided a rejoinder to that argument in my testimony last year and I have done so again in my prepared statement for this year, and essentially the rejoinder is in two parts. Right now the Navy is building essentially one submarine every 12 months. They want to move to a profile of building one submarine every 6 months. If you do two submarines in one year and one the next, you have done 3 submarines over 24 months, and you can schedule those 3 submarines so that you have a start on each boat once every 8 months. Starting a boat once every 8 months could actually help the industrial base make a transition from the current schedule of one boat every 12 months to the schedule of one every 6 months. It would be the intermediate step, in other words. And the second part of the rejoinder is that the Navy's own shipbuilding plan includes a 2–1–2–1 profile for the final 10 years of the plan.

The subcommittee asked that I address the question of the potential effect of DDG–1000 cost growth on the shipbuilding plan. Very briefly. If DDG–1000s wind up costing what CBO estimates they will cost, then the total amount of cost growth on the seven DDG–1000s would be roughly $11.8 billion in then year dollars. The cost growth on the seven ships, in other words, would be roughly comparable to the total amount of funding in the SCN account in certain recent years.

Mr. TAYLOR. For the record, what is your estimate? What is CBO's estimate as to the cost?

Mr. O'ROURKE. I don't have my own estimate. I have been working on the basis of CBO's estimate.

Mr. TAYLOR. What is CBO's estimate for the record? What is the dollar amount for the record?

Mr. O'ROURKE. The Navy's estimated budget for the Loop 2 lead ships is about $3.2 billion apiece and the follow ships are roughly $2.5 billion apiece. And CBO has estimated—and I will detail it for you later—that these ships as a whole, that the seven ships would average out to about 70 percent more expensive than what the Navy had estimated last year or maybe 65, 64 percent more than what the Navy is estimating this year.

Mr. TAYLOR. So that dollar is what?

Mr. O'ROURKE. So that instead of the lead ships costing $3.3 billion, you would add 60 or 70 percent to that total. You would be up more toward the $5 billion range. And CBO will provide those numbers more specifically for you in their testimony.

Mr. TAYLOR. Okay.

Mr. O'ROURKE. The subcommittee asks that I address the option of procuring DDG–51s instead of DDG–1000s as a bridge to a nuclear powered CG(X) based on an enlarged version of the DDG–51 hull. One approach would use the funding now programmed for the five remaining DDG–1000s to procure eight additional DDG–51s. Another approach would use the funding program for the third and fourth DDG–1000s to procure three additional DDG–51s and use the funding for the final three DDG–1000s to procure three CG(X)s that are currently planned for later years.

The DDG–1000 and DDG–51 are both multi-mission destroyers. The 1000 has a stronger emphasis on land attack and operations in littoral waters. The 51 is more oriented toward blue water operations. Consistent with its larger size, higher procurement cost, and greater use of new technologies, the Navy believes the 1000 is more capable than the 51 in several respects. The great individual capability of the 1000 would be offset to some degree by the greater quantity of 51s. The Navy has stated that it doesn't require additional 51s. Supporters of procuring additional 51s could argue that they are multi-mission ships for which the Navy would find good uses. Procuring 51s might pose less risk of cost growth than procuring 1000s or would likely result in higher life cycle crew related costs. And based on information provided by the Navy, procuring the 51s in the numbers I mentioned would generate 60 to 64 percent as many shipyard labor hours as procuring the 1000s.

Moving to the CG(X), the Navy has not yet announced a top level design for this ship. This raises a potential oversight question as to whether the Navy is leaving itself enough time to do the design work needed to support the procurement of a lead CG(X) in fiscal year 2011. A second potential oversight question is whether the continued passage of time without an announced top-level design would have the effect of running out the clock on the option of procuring a nuclear powered CG(X) in 2011.

Regarding the National Defense Sealift Fund, which I cover in my prepared statement, one potential oversight issue for the subcommittee is whether law or regulations regarding the NDSF should be altered to make cost growth on prior year NDSF ships more visible in budget justification documents. And this has to do with the 11th T-AKE that was discussed a little bit earlier in the hearing.

Mr. TAYLOR. Mr. O'Rourke, I am sorry to interrupt. I would hope at some point during your presentation that you would go back to

that 64 percent of the man-hours for the DDG–51 versus the 1000. And I would hope that either in your analysis or Dr. Labs' analysis, how much of that time is actually wasted on the learning curve of the new vessel? How many of those hours are just wasted if someone tries to—I am going to hang this bracket, how am I going to get this pipe through this bulkhead as opposed to actually producing something the Navy can use?

Mr. O'ROURKE. The Navy has testified or the Navy provided information to me actually within the last couple of days that it estimates that building a DDG would require roughly 40 percent as many shipyard labor hours as building a DDG–1000. And they provided me with what those man-hour numbers were. I am just going to keep it in terms of ratios and percentages if you don't mind here. And part of the reason that——

Mr. TAYLOR. But being in your line of work—and you struck me as an expert. If you can't do that today, I would very much welcome that for the record. Because with any new vessel, there is a heck of a lot of time wasted just trying to figure out how to do something.

Mr. O'ROURKE. Part of the reason the ratio is as it is, where the 1000 is estimated by the Navy to generate 2–1/2 times the amount of shipyard labor hours as the 51 is because these DDG–1000s are at the top of that class' learning curve, whereas the 1000s are well, well down their learning curve. There is a little bit of lost learning now on the 51 because they have had a gap in the production. But still they would be back to a situation that was equivalently much farther down the learning curve than what you have on the 1000. So some fair portion of the difference in the labor hours between these two ships reflects the fact that the 1000 is at the top of its learning curve, and these would all be early ships on that class' learning curve.

Mr. TAYLOR. For the record, you would have two yards simultaneously learning the same things.

Mr. O'ROURKE. Yeah. If the ships are built as complete ships by separate yards, then you would have a split learning curve. If they are built through some kind of shared or joint production arrangement, then the splitting of the learning curve would be mitigated and you would have a unified learning curve for that portion of every ship that is built by the shipyard that does it.

Mr. TAYLOR. Okay. Please continue.

Mr. O'ROURKE. I was mentioning the NDSF and the issue of the 11th T-AKE that was discussed earlier in the hearing. This situation arises because ships funded through the NDSF are not subject to the full funding provision in the same way that ships and other defense items are that are procured through the procurement title of the defense appropriation account. That is why I have always pointed out in my reports and testimony over the years that if you fund a ship through the NDSF, it will not be subject to the full funding provision in the same way and the Navy will have the ability to move money around in the way it has done now on the T-AKE program. When ships are funded through the NDSF for a multi-ship class, the Congress may nominally provide the money thinking that that money is going to go to a specific ship, but it does not have to. And this is not the first time this has happened.

The Navy moved money around on the 19 or 20 ship large medium speed roll on, roll off, or LNSR shipbuilding program, and there was a matrix of funding for that program in which funding provided for specific ships was in fact divided up and applied to other ships in the program.

For example, there was one fiscal year—I think it was fiscal year 1995 when Congress not only provided money for two of those LNSRs but the money in fact was chopped up and applied to 16 different ships in the program. So it is very important, I think, for Congress to realize that when they fund a ship in the NDSF in a multi-ship class, the Navy has the ability to move the money around in this way under the current laws and regulations pertaining to the NDSF.

Mr. TAYLOR. Mr. O'Rourke, while you are on that subject, it is my belief that Admiral Sestak will be asking the committee staff to draw an amendment to close that loophole. I would ask if you could find the time to take a look at that suggested language and make sure that it is accomplishing what we would like to accomplish, which is to close that loophole.

Mr. O'ROURKE. I would be happy to do so.

And the final thing that I wanted to mention in my opening remarks relates to China because the subcommittee asked that I address the question of Navy capabilities needed to counter a future western Pacific threat. The country that currently appears to have the most potential, proposing a significant western Pacific military challenge, is China. There is a consensus among observers that Taiwan is a near-term focus of China's military modernization. Consistent with this, observers believe China want its modernized military to be capable of acting as an anti-access force for deterring, defeating or delaying intervening U.S. forces. China in coming years could field a layered maritime anti-access force broadly analogous to the Soviet sea denial force of the 1980's. One potential difference is that China's force could include anti-ship ballistic missiles capable of hitting moving ships at sea.

Some observers believe China's naval modernization effort is also tied to broader or longer term goals, such as asserting China's regional military leadership, defending China's maritime territorial claims and protecting China's sea lines of communication. These broader or longer term goals imply that if the situation with Taiwan is somehow resolved, China will find continuing reasons to pursue its modernization effort. These goals also imply that if China completes its planned buildup of Taiwan-related force elements or if the situation with Taiwan is somehow resolved, the composition of China's naval modernization effort could shift to include a greater emphasis on naval force elements appropriate for supporting these broader or longer term goals, and that could mean a greater emphasis on things like aircraft carriers, nuclear powered attack submarines and serial production of destroyers.

And last, a third implication of these broader or longer term goals is that even if China's military never fires a shot in anger at an opposing military, China's naval forces will still be used on a day-to-day basis to promote China's political position in the Pacific. This creates an essentially political reason to maintain a competitive U.S. naval presence in the region.

Mr. Chairman, this concludes my statement, and I will be happy to respond to any questions the subcommittee may have.

[The prepared statement of Mr. O'Rourke can be found in the Appendix on page 63.]

Mr. TAYLOR. Thank you very much. The Chair now recognizes Dr. Labs.

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

Dr. LABS. Mr. Chairman, members of the subcommittee, I appreciate the opportunity to appear before you today, and I too would like to sum up my statement for the record, and I want to summarize it right here.

Mr. TAYLOR. Without objection.

Dr. LABS. I would like to make five points. First, executing the Navy's most recent 30-year shipbuilding plan will cost an average of about $25 billion a year in 2009 dollars or about double the 12.6 billion a year the Navy has spent on average since 2003. The costs displayed in the Navy's 2009 shipbuilding plan imply that the Navy appears to have substantially revised its estimate of the cost of implementing the 30-year shipbuilding plan, bringing its overall estimate into general line with CBO's estimates of the past 3 years.

However, I would like to add a caveat to that. Detailed data provided to CBO just last night implied that the Navy may not have changed its cost estimates for unit costs of individual ships compared to its 2007–2008 plans. There is a disconnect there that we are going to explore more fully with the Navy and try to understand why the cost and the plan show something entirely different from the detailed data that was provided to us last night.

Nevertheless and notwithstanding the overall alignment of the Navy's and CBO's estimates based on the cost that are in the plan itself, CBO's cost for the 2009 shipbuilding plan through 2013 are about 30 percent higher than the Navy's estimates. The CBO estimates those costs at an average of 21 billion a year versus about 16 billion for the Navy estimate.

In particular, CBO estimates that the DDG–1000 guided missile destroyer and the CG(X) future cruiser would probably cost significantly more than that Navy currently estimates. For the 2009 to 2020 period, the period in which the Navy describes as the near term in its plan, CBO estimates for new ship construction alone are about 15 percent higher than the Navy's.

And fifth, the Navy's cost estimates for the 2009 shipbuilding plan beyond 2020, which are described in the Navy's plan as the far term, appear higher than CBO's by about 20 percent. It appears to us that the Navy has abandoned its cost target methodology that it has used in previous shipbuilding reports to develop its 2009 shipbuilding plan.

Under its 2007 and 2008 plans, the Navy estimated that it needed about an average of about $16 billion a year over 30 years of new construction funding alone to buy and sustain a 313-ship fleet. From the limited information available in the 2009 plan itself, not the detailed data we received yesterday, the Navy now appears to estimate the cost of its plan at about $22 billion a year in new construction spending alone, a 40 percent increase. That number ex-

cludes the cost of replacing the Navy's Ohio class ballistic missile submarines when they retire in the 2020's. The Navy includes those submarines in its procurement schedule under the 2009 plan but excludes them from its cost estimates. Including SSBNs and other costs, such as nuclear refuelings, would raise the Navy's estimate for total shipbuilding to an average of about $26 billion a year over 30 years.

CBO requested one month ago detailed information on ship costs for the Navy's 2009 plan. As I stated earlier, it was provided yesterday evening. There is, however, a large disconnect between the overall cost for shipbuilding displayed in the 2009 plan and the detailed information provided to CBO. The data and the shipbuilding plan implied total 30-year new construction costs of $22 billion a year, as I had just mentioned, compared to 13 billion a year using the detailed information provide by the Navy to CBO.

As I said, we are going to try to work with the Navy and try to understand exactly what is going on here. With respect to the 2009 and 2013 period of the Future Years Defense Program, CBO's estimates for most new ship programs are higher than the Navy's, but the largest differences between the two estimates are for the cost of the DDG–1000 destroyer and the cruiser.

The Navy plans to buy five DDG–1000s and 2 CG(X)s between 2009 and 2013. The service estimates the cost of those seven ships at a total of about 16 billion, whereas CBO's estimate is $29 billion for the two cruisers and five destroyers. If CBO's cost estimates for the DDG–1000 and the CG(X) are realized, it would be difficult for the Navy to build a 313-ship fleet without substantially increasing the service's shipbuilding budgets during the years spanned by the 2009 FYDP and beyond. The difference between CBO's and Navy's estimates for the cost of the DDG–1000 program alone represent about 12 percent of the Navy's total shipbuilding budget to 2013, or about $10 billion. In the absence of additional resources, paying that difference could, for example, require canceling the purchases of either 20 littoral combat ships or most of the MPF(F) program purchased under the 2009 FYDP.

There are obviously other trades that could be made, but those are two illustrations. If the CBO's estimate for the cost of CG(X) is realized, the Navy may find it difficult to purchase two CG(X)s a year between 2015 and 2021, as contained in the 2009 plan. If the service is able to afford only one CG(X) per year, then seven CG(X)s would either be canceled or delayed until the mid to late 2020's. Delay in the CG(X)s purchases rather than the cancellation could mean that other ship purchases contained in the 2009 plan during the period beyond 2020 might have to be canceled or delayed as well. In either case, the Navy may find it difficult to achieve a 313-ship fleet in 2020 or beyond.

Finally, my last point today. While there are a number of issues contained in the Navy's 2009 shipbuilding plan that would be worth highlighting—and I was glad to see Mr. O'Rourke note a number of them—I would like to note that the Navy has assumed that the service life of many of its surface combatants and amphibious ships would be longer than in previous plans. Specifically, the Navy assumes the DDG–51 Arleigh Burke class destroyers would serve for 40 years and 16 amphibious ships, including all 12 of the

existing LSD–41s and 49s would serve an average of 43 years, about 4 years longer than what the Navy assumed in its previous two shipbuilding plans. Historical evidence suggests that that may not be a reasonable assumption, at least with respect to surface combatants.

Over the last 30 years, the Navy has retired 16 full classes of service combatants and retired part of two additional classes. The average retirement age of those ships was less than 25 years. The reasons the Navy cites for those retirements vary. Some were for budgetary reasons during the drawdown after the Cold War. Others were because ships reached the end of their service life. But it does illustrate the challenge the Navy will have in keeping the DDG–51s in the fleet effectively for 40 years.

Thank you, Mr. Chairman. That concludes my opening statement. I look forward to any questions you may have.

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

Mr. TAYLOR. Thank you very much, Dr. Labs. The Chair yields to the gentlemen from Connecticut, Mr. Courtney.

Mr. COURTNEY. Thank you, Mr. Chairman. Dr. Labs, I think I counted the word "disconnect" in your testimony about a half dozen times. Really, looking at it from up above or 30,000 feet or whatever, I mean, your description describes a fairly almost incoherent arrangement in terms of the targets that people are trying to reach at. Is CBO going to—I mean, do you look at the plan in terms of the ships and do your own sort of run as far as what you think it would cost to get there versus what was submitted to the Congress by the Navy?

Dr. LABS. Yes, sir. We generate our own cost estimates for most of the ships in the shipbuilding plan. There are a few small items that we may adopt the Navy estimates on. But all the major shipbuilding programs we try to come up with an independent estimate.

Mr. COURTNEY. And are you still sort of crunching the numbers on that or is that something you have already arrived at?

Dr. LABS. Based on the available data that we have today, we got an estimate that is in the prepared statement that is our current estimate. Now, depending on what kind of information—you know, I was explaining to some of the staff, for example, that depending on what kind of detailed information we got back from the Navy on their individual ship costs, we might have to go back and kind of look at our assumptions and see if what we had done was reasonable. Because at the time, it appeared to us that the Navy's unit costs for many of its ship programs were as high or higher than ours, at least in the outyears.

Now, having received this detailed information just last night at 6 p.m., the unit costs that they are listing there, that does not appear to be the case. And I am not exactly sure why that is and see if they have got some—you know, I just don't quite understand what is going on in there. We are going to try to figure out why that is. But overall, the estimates that I provide here, CBO estimates, are generated by us in-house.

Mr. COURTNEY. Is it higher or lower?

Dr. LABS. As was mentioned earlier, through the 2020 period, the ship unit cost estimates that CBO has are higher than the Navy's by varying amounts depending on the ship program. Beyond 2021, the total shipbuilding budget costs that were displayed in the plan in the Figure 1, in the Navy shipbuilding plan, would imply that at least some of their unit cost estimates would have to be higher than CBO's, although that did not prove to be the case in the detailed information that we received. So again I am not sure what is exactly going on there.

Mr. COURTNEY. Okay.

Dr. LABS. I hope that answers your question.

Mr. COURTNEY. Sort of. Mr. O'Rourke finished his testimony talking about the maritime challenge and trying to meet it with a fleet size that I think the Admiral earlier described today as sort of the minimum risk level. It just seems that—talk about a disconnect, I mean, there is obviously a problem that when you, I guess, put the two testimonies side by side—Mr. O'Rourke, again you have kind of answered a lot of my questions right off the bat talking about the 2–1–2 sequence. But I wanted to at least get your comments on another approach, which has been sort of talked about, which is using the advanced construction method which I guess has been done in other ship programs as a way of, you know, sort of maybe getting to that same sort of smoother trend without necessarily going to 2–1–2. And I just wondered if you have any comments about how that could work or might work.

Mr. O'ROURKE. As I understand it, there has been an idea put forward to put some advanced construction funding into this year's budget as a plus-up for the purpose of beginning work sooner, I take it, on the second fiscal year 2011 boat. The idea there would be to do some of the work on that boat a little bit earlier and to therefore permit the shipyard to better optimize its construction schedule for that ship. This has been done to one degree or another with a few other ships in recent years and the experience seems to be that, yes, doing that sort of thing can permit the ship to be built in less time and therefore make the ship less expensive. So doing this would not add any extra submarines into the submarine force, but it would permit that particular submarine to be built less expensively and that could free up money to be used on other priorities.

Mr. COURTNEY. Dr. Labs, in your comments regarding the attack submarine shortfall, I mean, one of the ways you sort of postulate that the Navy could address that is by, I guess, the scheduling, that if you build submarines faster and get them operational faster, that kind of reduces that trough that is in the 2020 range. Does that make sense?

Dr. LABS. Yes, sir. What I am referring to there is that there are various initiatives that the Navy is looking at to try to mitigate that shortfall, And one of the ones that they have stated that they are going to try to achieve is to actually build the submarines rather than in six years, try to get that down to something less than that, even as little as five years. And if you do that, you get—I don't remember the numbers off the top of my head—but you get more submarines into the fleet a little bit faster.

Mr. O'ROURKE. It is a one-time benefit of two extra ships, and it is already cranked into the Navy's shortfall mitigation plan.

Dr. LABS. But the 2009 plan as it stands does not yet take credit for that. They don't assume that yet, because they haven't achieved that faster build rate so far; and that is something that they are going to try to do.

Mr. O'ROURKE. The attack submarine shortfall has been something that, I know in my own work, I have been testifying and reporting on now for 13 years. And the Navy came forward with a shortfall mitigation plan and presented it to Eric and me a year or two ago, and part of it is to get the one-time benefit of the two extra boats by shortening the construction schedule.

And there are other measures in that mitigation plan as well. The Navy testified that that mitigation plan can close up the gap in terms of maintaining day-to-day forward deployment of attack submarines, but it could not fully close the gap in terms of your ability to surge submarines for wartime uses. And the gap there remained three surged boats, which would mean a gap in your total inventory of four surged boats.

So if you take that now as the key gap for which the Navy doesn't even have an identified mitigation strategy at this point, then of those four boats in that remaining gap, the Congress has now funded one of those four boats, which is now the second boat currently scheduled for fiscal year 2011, and that leaves three more to go. And that is why, if the Congress were to decide to accelerate the fiscal year 2011 boat to an earlier year and then create that hole in fiscal year 2011 to put another boat in, you would actually be making in percentage terms a significant reduction on that remaining four-boat wartime shortfall that the Navy calculated it does not have a mitigation strategy for.

Mr. COURTNEY. Well, as usual, you are giving us the spectrum of options, which is very helpful. And the SSBN change that took place where it went from 14 to 12, I don't know if you have any comments you want to make as far as that particular.

Mr. O'ROURKE. Only one comment, which is that that is consistent with the Navy's testimony before the Senate Appropriations Committee, I think it was last year. They mentioned the same reason for planning 12 rather than 14, that they would be moving to a life-of-the-ship core, and you would not run into a situation halfway through the ship's life cycle of having to take two boats effectively out of service for the purpose of doing the midlife refuelings.

Dr. LABS. The only thing I would add to that, because that was the same thing we had understood last year as well, is that the plan's requirement is still, though, at 14. The actual production schedule is 12. It is not clear to me why necessarily—that if they can achieve the same operational goal with 12 as they needed 14 in the past, why they wouldn't necessarily have revisited the question of the requirement.

Mr. COURTNEY. Thank you, Mr. Chairman.

Mr. TAYLOR. Thank you, Mr. Courtney.

Mr. O'Rourke, have you been asked by the Navy or anyone else to take a look at the proposal to stop the DDG–1000 at the purchase of two, go back to additional 51s with the money that would have gone for the additional 1000s, and come up with some sort of

a formula of what you think would be an economic order quantity for the additional 51s?

Mr. O'ROURKE. No, sir. The Navy has not asked me to look into that.

Mr. TAYLOR. Okay. Would you? For the record, I would like this subcommittee to make that request.

Mr. O'ROURKE. I would be happy to do that on behalf of the subcommittee.

Mr. TAYLOR. The second question would be, we would appreciate—and Dr. Labs as well—your professional opinion as to when would be the soonest that this Nation could expedite the acquisition of the nuclear cruiser 2, which legislative year, given the challenges that we have now learned the hard way with the LCS, which the Coast Guard has learned the hard way with the 1–10 program.

I would—again going to the thought that was thrown out of building additional 51s, building fewer 1000s, expediting the nuclear cruiser, when is the soonest that we could reasonably do that?

Mr. O'ROURKE. I can give you a partial answer to the second question right now.

Assuming that we don't fully fund the lead CG(X) in this year's budget, in the fiscal year 2009 budget, then the question becomes, do you do it in fiscal year 2011, or could you accelerate it to 1 year to fiscal year 2010?

In terms of funding the ship, you could fund it as a fiscal year 2010 ship. It might not execute on a schedule normally associated with a fiscal year 2010 ship, but you could fund it. It would, in effect, be banking the ship to be executed in some later year.

So there are two questions here. One is, how soon could you execute a ship of a given design? And the other question is, how soon could Congress fund it? And the answer is, Congress could fund it in fiscal year 2010 if it wanted to, with the understanding, however, that it would not necessarily execute on a schedule normally associated with an fiscal year 2010 ship. But you could actually get the ship recorded as a procurement in fiscal year 2010.

Mr. TAYLOR. Keeping in mind that that nuclear cruiser would have to be substantially larger than the DDG–51 hull, my observation is that the Navy, in going to systems integrators, fairly well destroyed within the Navy their ability to make a good decision as to what the next generation of ships ought to look like. My opinion is that they are in the process of reconstituting that process.

How quickly do you think the Navy will get that capability back within house? How quickly could they come up with a design for a nuclear powered cruiser that they have confidence would be good for the things that we are looking for, which is a ship that is a viable part of the United States fleet for 30 years after the day it is christened?

Mr. O'ROURKE. The Navy is in the process, as I think the Coast Guard is, of rebuilding its in-house system design engineering capability. And, as a general answer to that question, I would say the following: That the earlier you design the ship, the greater the amount of reliance the Navy would have to place on private industry to handle certain aspects of that design work; and the later you do it, the further down you do it, the greater share of that design-

related responsibility the Navy could take on for itself in-house. It would be a progression or a spectrum that existed over time.

Mr. TAYLOR. Dr. Labs, don't be shy.

Dr. LABS. I will not, Mr. Chairman. Thank you.

What I would say is—not that I disagree with anything that Mr. O'Rourke said; I fully concur with that. I would simply add that if you look at sort of comparative surface combatant programs, the DDG–1000 being an example, and others, and given the current state at which the Navy decision-making is for the CG(X) cruiser—at least to the extent that I can understand it, because I haven't seen the AOA either—at least at this point, executing a CG(X), a nuclear CG(X) in 2011, it seems to me, would be rather optimistic, especially when you start to think about the fact that you do want to have a lot of that detailed design done so you avoid as many cost overruns as possible.

But to be able to put precisely as to when that could happen, I am not sure. Certainly funding it in 2010 or 2011 is not an issue. The question is, when would they actually then start construction, bending metal?

Mr. O'ROURKE. This is the concern that I raised in my testimony, that we do not yet have an announced top level or concept design for the ship. At this same or this equivalent point in the DDG–1000 program, we did have that kind of an understanding of what the ship was going to look like; and, in fact, we had had it for several months. And so at the parallel stage in the CG(X) program, we don't even have a cartoon that we can look at for this ship.

Mr. TAYLOR. A question I would like to pose to you: We often hear from the detractors of the plan to go to the nuclear powered cruiser is that it would cost more money.

I would counter that by saying—and I want you to comment on this—I think we have a very good idea of what an A1B power plant would cost. I would counter by saying, it might be the only part of the nuclear cruiser that we do know what it is going to cost, as opposed to weapons systems, electronics, hulls, everything else that is still up in the air. So I would like you to comment on that.

Another thing I would like your thoughts on is, I am absolutely committed to preserving our defense industrial base for shipbuilding. One of the challenges I have been made aware of is the need to keep the capabilities of the nuclear propulsion capabilities design work team together at Electric Boat and other places. To what extent, if any, in your opinion, could the expertise that is available at Electric Boat be put to use to designing the propulsion for that nuclear cruiser? And, would it make sense, in your opinion, to try to work toward that goal or not?

Mr. O'ROURKE. Just very briefly, if I could respond to the second of those questions and then go back to the earlier one.

Sustaining the submarine design and engineering base, including the portion of it that design submarine reactor plants, has been a concern on the Hill and within the Navy for a number of years now.

Mr. TAYLOR. In your opinion, is it a valid concern?

Mr. O'ROURKE. In my view, it is a valid concern, and——

Mr. TAYLOR. I just want to get that for the record.

Dr. LABS. I agree that it is a valid concern.

Mr. O'ROURKE. And one option for helping to sustain the submarine design and engineering base including, or in this case, specifically the portion of it that designs reactor plans, is to have Electric Boat work on the design of the reactor plant for a nuclear powered cruiser. In fact, Electric Boat has participated in the design of the reactor plant for the carrier. So there is already precedent for having Electric Boat workers participate in the design of the surface ship nuclear plant, and that is part of what has helped us sustain that base in the past.

Mr. TAYLOR. Going back to both of your professional opinions now, stated what is known, would it be a logical thing for this committee to work towards?

Mr. O'ROURKE. I think it is certainly a viable option for the committee to consider.

But—as you know, I can't make recommendations for or against, but it is a logical option that the Congress has available to it as one means for helping to sustain especially that portion of the submarine design and engineering base.

On your earlier question about the——

Mr. TAYLOR. I want to see, Dr. Labs, what is your opinion?

Dr. LABS. I was going to echo Mr. O'Rourke's comments, in fact the exact same analogy that Electric Boat has used some of its nuclear engineers and designers to assist in the development of the CVN–21 program, the CVN–78 carrier. So he is exactly right, the precedent is there.

It is certainly something that would be, especially given the nature of the way the shipyards are run by two corporate giants, and the six yards and the two corporate giants; that kind of interyard transfers and transfers of skills, even sometimes sharing between the two corporate giants, is occurring much more frequently today than, say, it would have 10 or 20 years ago.

To your specific question about, is it a viable option for the committee to consider, to pursue, I am in the same position Mr. O'Rourke is. I am not allowed to sort of make recommendations.

Mr. TAYLOR. You have been asked.

Dr. LABS. It is certainly something worth exploring. Any options along those lines is worth exploring. And there is more than one out there. There is certainly the *Virginia* class reactor can put that into a service combatant. There is the carrier reactor you can put that in. Again, there are going to be design changes, there is going to be size considerations.

Mr. TAYLOR. You have raised a great question. And for the record, and whether you are comfortable with it right now or not—and I am sorry to interrupt, Mr. O'Rourke, but I want to get this on the record while we could. I have been told that the power plant for the *Virginia* class would be too small for the anticipated needs of the CG(XM).

Dr. LABS. I have been told the same thing.

Mr. TAYLOR. But A1B would be, in the opinion of the folks I have spoken to, provide all the power that is necessary for propulsion, weapons upgrades, for electronics upgrades, for the 30-plus-year life of the vessel.

Dr. LABS. The same thing has been explained to me, as well, by folks with the Navy. Now, that also goes to add that the size of the

reactor for the—the carrier reactor, putting it in a cruiser would necessitate a much larger surface combatant. There was some press reports last year of sort of 23,000-, 25,000-ton ships. That is where, as I understand it, you would need to go for the weight and the supporting systems.

Mr. TAYLOR. Dr. O'Rourke, we interrupted your line of thought, and I apologize, but I did want to ask those questions.

Mr. O'ROURKE. No problem. I wanted to get back to the first half of what you originally asked, which had to do with the up-front costs versus the life cycle costs and how we know the costs of the A1B versus not knowing.

The argument for the nuclear cruiser from a strictly economic point of view has always been the general one that the up-front costs would be offset to some degree, largely or entirely, over its life cycle by avoided fossil fuel costs.

Now, when the Navy was asked this at the full committee's hearing several days ago, the Secretary of the Navy acknowledged that logic, but he also said that he was not able as the Secretary of the Navy to borrow against future savings to pay right now for the up-front costs. And that is true.

But it is also true that the Navy is anticipating life cycle savings from features that it is putting into the DDG–1000 or other new ships that will reduce their cruise size. So it is willing to pay additional up-front costs within an eye toward recouping savings down the road. They can't borrow against those savings, either, but as a matter of strategic planning for the Navy's future, they are willing to make that trade-off.

So, if there is a different way of looking at the situation from the way the Secretary of the Navy described it to the full committee the other day, it would be to say, yes, you can't borrow against those future costs to pay for something now. But the Navy nevertheless is making that choice in the area of putting technology into ships for reducing cruise size.

Mr. TAYLOR. Excellent point. Thank you.

Dr. Labs, anything additional?

Dr. LABS. I don't have anything to add to that. Certainly a calculation could be done to sort of determine where that would fall out on different assumed prices for future fuel costs, but I don't necessarily have anything to add to what Mr. O'Rourke said.

Mr. TAYLOR. My last question would be, and then I am going to yield to the gentleman from Connecticut: I have now heard a cost estimate ranging from today's testimony of $1 billion for an additional 7 months of operation of the carrier *Enterprise* to $2 billion, which was given to me by another senior naval officer.

For the record, if either of you gentlemen would like to go on the record as to what you estimate the Nation would pay to get approximately another 7 months of service; and I guess the follow-up would be, would it only be for 7 months of service or so, or would it be for a period longer than that?

Dr. LABS. I don't have any detailed information that would allow me to sort of give you an estimate like that. If you would like me to look into that question, we can certainly do that.

Mr. TAYLOR. I think for the sake of the—I think it would be a very wise thing for us to request that.

Dr. LABS. Sure.

Mr. TAYLOR. Mr. O'Rourke.

Mr. O'ROURKE. If it is a matter of coming up with an independent cost estimate, then it would be better for me to defer to CBO as the point person for that.

Mr. TAYLOR. Okay. Mr. Courtney.

Mr. COURTNEY. I am all done.

Mr. TAYLOR. Again, thank you very much. We are going to leave the record open for the customary five days for members to submit questions. And we thank you very much for appearing before the committee.

We stand adjourned.

[Whereupon, at 1:10 p.m., the subcommittee was adjourned.]

A P P E N D I X

MARCH 14, 2008

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

MARCH 14, 2008

Opening Statement of The Honorable Gene Taylor
Chairman, Subcommittee on Seapower and Expeditionary Forces

Oversight Hearing on the Fiscal Year 2009 Budget Request for Ship Construction
March 14, 2008

The Hearing will come to order.

This morning the subcommittee meets to receive testimony from representatives of the Department of the Navy, the Congressional Budget Office and the Congressional Research Service on the fiscal year 2009 budget request for ship construction. The subcommittee is pleased to welcome for to our first panel:

The Honorable Allison Stiller	Deputy Assistant Secretary of the Navy, Ship Programs
and	
VADM Barry McCullough,	Deputy Chief of Naval Operations Resources and Requirements

Our second panel will consist of:

Mr. Ronald O'Rourke	Specialist in Naval Affairs, Congressional Research Service
and	
Dr. Eric Labs,	Senior Analyst, Congressional Budget Office

I would like to personally welcome all four of our witnesses for their testimony.

The Navy and the Congress have some very difficult decisions to make regarding shipbuilding. It is no secret that the current administration has not been a friend to the Navy. By the time this President leaves office the Navy will have about 60 ships less than

when he started. It will be up to the next President and the next Congress to put our nation back on track to building and maintaining a powerful fleet. However, there are some things we can do and we must do this year to set the course for recovery.

The current shipbuilding plan for the 313 ship fleet is pure fantasy. It is totally unaffordable with the resources the Department of Defense allocates to the Navy for ship construction. This year in the *Annual Long Range Report to Congress on Shipbuilding* the Navy essentially admits it does not have the funding to build the ships it requires in the "far term" which is defined as after 2020. The Navy also increased projections of the "near term" shipbuilding costs from $13.4 billion dollars per year to $15.8 billion dollars per year (using constant 2007 dollars). These projections were forecast by Dr. Labs from the Congressional Budget Office last year, to the Navy's adamant denial. Today we will have the opportunity for the Navy to explain their revised forecasts and receive an update from Dr. Labs as to his evaluation of the new forecasts.

I am disappointed with the ever changing shipbuilding plan. We have been told for the past two years that the key to efficiency is stability, I agree. However there is nothing stable in this shipbuilding plan.

As I analyze the shipbuilding plan I see four programs that are building ships on time and on budget. Those are the LPD 17 class amphibious assault ships, the Arleigh Burke class destroyers, the Virginia Class submarines, and the T-AKE Dry Cargo Ammunition Ship. And what is the Navy answer to programs which build ships on cost and schedule?

- Cancel the LPD 17 before the minimum Marine Corps requirement of 11 ships is achieved;
- Cancel the DDG 51 Burke destroyers in favor of a brand new ship with 10 major technological innovations that may end up costing 5 times what an Arleigh Burke costs.
- Continue to delay construction of two submarines a year until 2011
- Cancel the last two ships of the T-AKE class.

As a side note, I asked ADM Keating, the Commander of the Pacific Fleet, on Wednesday if he would rather have 2 DDG 1000s or 5 DDG

51s- he told me he wanted the DDG 51s. This proves to me that the Navy in Washington does not always listen to the Navy which actually operates the Fleet.

Although I put the T-AKE in the list of programs which are healthy, I would like our witnesses to address why the T-AKE that was requested and funded in fiscal year 2008 is not being put on contract. The subcommittee understands that the money that was requested to purchase a ship was instead used to re-negotiate contract terms. I understand the Navy thinks they can do this because the money is in a working capital fund called the National Defense Sealift Fund or NDSF. I assure you that it is not the intent of the Congress that money authorized and appropriated for a specific purpose, in this case the procurement of a ship, would be used for any other purpose without further authorization or reprogramming. I expect our Navy witnesses to comment on this today.

Instead of being asked to fund those programs that are building ships on time and at projected cost we are asked to fund programs which are not. One such program is the Littoral Combat Ship or LCS. This program will go into the textbooks to train future acquisition officials how not to run a program. The LCS will be at least twice as expensive as advertised, it has taken twice as long to build the lead ships, neither vessel has been underway on its own power, and the Navy cancelled two contract options last year, which were already funded, because of cost overruns. Yet this year we are asked to authorize two more ships – why? What has changed between then and now that indicates that this program is in any way ready to build more ships. We have been told the answer to this question is that there is an "emergent need" for these ships in the fleet. If that is true why did the Navy cancel two of the ships? At some point we must stop throwing money at this program until the Navy can prove that at least one of the ships can get to sea and do its mission.

We are also asked to continue to fund a class of 7 destroyers that are the most expensive surface warships ever built. I understand that the program manager has gone to great lengths to ensure that mistakes that occurred in the LCS program are not repeated in the DDG 1000 program. That is good. However this ship is on an order of complexity which is orders of magnitude greater than the LCS. A

cost overrun of only 10% for the first two ships, which would be excellent for a first in ship class, is still close to $700 million dollars. With all the new technologies that must work for this ship to sail, a cost overrun of 20% or even 30% is not out of the question.

Another very risky program is the new aircraft carrier. Not that the Navy and Newport News Shipyard don't know how to build aircraft carriers, they do. However, one of the major new technologies, the electro-magnetic launch system, or EMALS, has not even been tested in a shipboard configuration and the ship is already under construction. Just this last week the Navy requested an additional $40 million dollars for continued development of EMALS because, and I quote, "the contractor underestimated design and production cost". The cynic in me would say the contractor purposefully low-balled the bid to get the contract knowing full well the Navy would be forced to pay whatever the true costs of the system turned out to be. Perhaps we should have built another Nimitz class carrier until the research and design for EMALS was complete.

I am concerned with the plans for the so called Maritime Prepositioning Force (Future) commonly known as the MPF(F). I am not convinced that the Navy and Marine Corps are in sync with the requirements for this force and I am not sure that the Navy has a reasonable plan to build these ships efficiently. One thing I do know is that breaking production lines and then restarting is expensive. Losing the tradesmen who build these ships because of gaps in the Navy build plan is unacceptable.

And last, I am very concerned that the Navy is not taking seriously the law that Congress enacted last year concerning the next generation cruiser. The law mandates the cruiser have an integrated nuclear power sustem, and it will have. Analysis of alternatives notwithstanding, I expect that the Navy will abide by the law. I understand that the planned start date of fiscal year 2011 may have to slip due to radar design, among other issues. But the issue is not the power plant. That plant is designed and ready to be built and installed in a hull form resembling our current surface combatant vessels.

Again, I thank our witnesses. And for our first panel I realize the two of you are doing everything you can to restore our fleet and I thank you for your service. The decisions allowing our Navy to deteriorate are being made at levels far above you and this subcommittee understands that. I look forward to your testimony and hope that we can reach some common sense solutions for restoring our fleet.

With that I recognize my friend from Maryland, the Honorable Roscoe Bartlett for any opening remarks he may wish to make.

MR. BARTLETT REMARKS

Thank you Mr. Bartlett. Secretary Stiller, I believe you have an opening statement……

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THE HOUSE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON SEAPOWER AND
EXPEDITIONARY FORCES

STATEMENT
OF

VICE ADMIRAL BARRY MCCULLOUGH
DEPUTY CHIEF OF NAVAL OPERATIONS
FOR INTEGRATION OF CAPABILITIES AND RESOURCES

AND

MS. ALLISON STILLER
DEPUTY ASSISTANT SECRETARY OF THE NAVY
(SHIP PROGRAMS)

BEFORE THE

SUBCOMMITTEE ON SEAPOWER AND EXPEDITIONARY FORCES

OF THE

HOUSE ARMED SERVICES COMMITTEE

ON

NAVY FORCE STRUCTURE AND SHIPBUILDING

MARCH 14, 2008

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HOUSE ARMED SERVICES COMMITTEE
SUBCOMMITTEE SEAPOWER AND
EXPEDITIONARY FORCES

Mr. Chairman, distinguished members of the Subcommittee, thank you for the opportunity to appear before you today to address Navy force structure and shipbuilding. The Department is committed to the effort to build an affordable 313-ship fleet by 2020 tailored to support the National Defense Strategy, the Maritime Strategy and the 2006 Quadrennial Defense Review. This year a total of seven ships are included in the FY 2009 President's Budget request, one VIRGINIA Class SSN, one DDG 1000, two Littoral Combat Ships (LCS), two T-AKE ships and one Navy Joint High Speed Vessel (JHSV). In addition, although not part of the Navy's 313-ship force structure, the Navy will procure one JHSV for the Army in FY 2009.

The Department has updated the Long Range Strategic Shipbuilding Plan with an eye on further stabilizing workload and funding requirements. A stable plan will enable the shipbuilding industry to maintain critical skills and to make business decisions that increase efficiency and productivity in order to meet the Navy's projected shipbuilding requirements. In addition to a stable shipbuilding plan, the Department has been exploring alternatives with the shipbuilding industry to mitigate workload fluctuations among shipyards to maintain a stable and skilled workforce across the industry sectors. The Department requests consideration of a general cost cap exception to allow the Department to work with industry to better level load work across the industrial base.

The FY 2009 request for new ship procurement is $12.4 billion and procures seven ships. The Navy's estimate for annual shipbuilding costs has increased to $15.8 billion per year. The increased estimate for annual shipbuilding costs is largely due to updated material costs, and increased labor costs as we are made aware of them. In the case of Fiscal Year 2009 President's Budget request, many of the labor and material rates that were impacted by Katrina are now reflected in the end costs of the ships. In addition, the impact of the Pension Protection Act has been reflected in higher overhead rates throughout the shipbuilding industry.

We still face challenges. In response to cost increases in the lead ships of the Littoral Combat Ship Class, the Navy has slowed the initial rate of production to reduce risk; however, the Navy remains committed to the program to fill critical warfighting gaps that exist today. In an area of success, the innovative design and build practices being implemented by VIRGINIA Class are already showing promise and can serve as a model for other programs. Bringing the cost of the VIRGINIA Class fast attack submarine down to $2 billion (FY 2005 $) per hull by FY 2012 remains a challenge and is currently within $50 million of target.

As you know the Gulf Coast shipyards have struggled since Hurricane Katrina. Over the last year the Navy and Northrop Grumman Shipbuilding Gulf Coast Operations have worked at a ship portfolio level to reset the schedule baselines and have adjusted the associated contracts accordingly. Additionally, six Gulf Coast shipbuilders were awarded contracts in 2007 under Section 2203 of Public Law 109-234, Emergency Supplemental Appropriations for Defense, the Global War on Terror and Hurricane Recovery 2006. The purpose of these contracts is to expedite recovery of shipbuilding capability in areas affected by Hurricane Katrina by repairing and/or replacing shipbuilding facilities, to make lasting improvement in shipyard facilities that would result in measurable cost reductions in current and future Navy shipbuilding contracts, and

to improve the ability of shipbuilding facilities on the Gulf Coast to withstand damage from potential hurricanes or other natural disasters.

Limiting the number of new designs and leveraging proven hull designs will be a priority in the consideration for the Navy's future fleet. For JCC(X), a Capabilities Based Assessment (CBA) was performed to refine the requirement for an afloat command and control capability and identify capability gaps. An Initial Capabilities Document (ICD) has been developed and is being put into the JCIDS process for JROC approval. The Navy is proposing that variants will be explored that leverage existing production lines. This is subject to OSD approval.

Lastly, we are actively working with our Allies to exchange best practices and lessons learned on shipbuilding efforts. A Shipbuilding Quadrilateral forum has been established which includes the U.S., United Kingdom, Canada and Australia to discuss systematic trends that are emerging in shipbuilding programs. The forum meets biannually and serves to discuss, compare and contrast acquisition matters such as contracting practice and industry trends.

As noted earlier, the Department proposes procurement of seven new construction ships as part of the FY 2009 President's Budget request. Each of these ships as well as other significant Navy shipbuilding programs are discussed below.

VIRGINIA Class

Currently, four VIRGINIA Class submarines have been delivered to the Fleet and six more are under construction. In the past year, the Navy commissioned USS HAWAII (SSN 776), the third boat of the VIRGINIA Class, christened the fourth submarine of the class, NORTH CAROLINA (SSN 777), and laid the keel for the fifth submarine, NEW HAMPSHIRE (SSN 778). In 2008 we will deliver and commission two submarines. NORTH CAROLINA (SSN 777), the fourth submarine, delivered on February 21st and will commission in May. NEW HAMPSHIRE (SSN 778), the fifth submarine is scheduled to deliver in August, eight months ahead of the April 2009 contract delivery date. In January 2008, the seventh, eighth and ninth hulls were named MISSOURI (SSN 780), CALIFORNIA (SSN 781) and MISSISSIPPI (SSN 782), respectively.

The VIRGINIA Class construction program is continuing to make progress toward realizing the Chief of Naval Operation's goal of buying two VIRGINIA SSNs for $4 billion as measured in FY 2005 dollars, starting in FY 2012. General Dynamics Electric Boat and Northrop Grumman Shipbuilding Newport News Operations will continue to jointly produce these submarines and are working to reduce the construction time and cost of these ships in concert with the program office. In this budget, the production of two VIRGINIA Class Submarines per year has accelerated to start in FY 2011 vice FY 2012. The Navy greatly appreciates the MYP authority provided last year to contract for the next block of VIRGINIA Class SSNs. Negotiations for an eight-ship multi-year procurement contract will begin soon, and we anticipate signing that contract in late 2008. The Navy requests approval of full funding for the FY 2009 submarine as well as advance procurement for the FY 2010 and FY 2011 submarines.

DDG 1000 Destroyer

This multi-mission surface combatant, tailored for land attack and littoral dominance, will provide independent forward presence and deterrence and operate as an integral part of joint and combined expeditionary forces. DDG 1000 will capitalize on reduced signatures and enhanced survivability to maintain persistent presence in the littoral in future scenarios. The program provides the baseline for spiral development to support future surface ships. DDG 1000 with the Advanced Gun System (AGS) and associated Long Range Land Attack Projectile (LRLAP) will provide volume and precision fires in support of Joint forces ashore. The dual band radar represents a significant increase in air defense capability in the cluttered littoral environment. Investment in open architecture and reduced manning will provide the Navy life cycle cost savings and technology options that can be retrofit to legacy ships thus allowing adaptability for an uncertain future. The program continues to execute on cost and schedule.

On February 14, 2008, the Navy awarded contracts for construction of the dual lead ships to General Dynamics Bath Iron Works and to Northrop Grumman Shipbuilding. Ship detail design and the design of the mission system equipment are on track to support the start of production. The start of fabrication for DDG 1000 at General Dynamics is planned for August 2008, and for DDG 1001 at Northrop Grumman in September 2009. The delivery dates for the two lead ships are staggered by approximately one year, with DDG 1000 scheduled to transfer custody to the Navy in April 2013 from General Dynamics and proceed to combat systems installation and testing. Ship delivery will officially occur upon the completion of combat systems acceptance trials. DDG 1001 will follow the same sequence approximately one year later, with custody transfer to the Navy in May 2014 from Northrop Grumman.

The FY 2009 President's Budget request of $2.55 billion provides full funding for the third ship of the class, and advanced procurement for the fourth ship. With recent approval from the Defense Acquisition Executive for the follow ship acquisition strategy, the Navy intends to utilize fixed-price incentive fee contracts for the follow ships awarded through a competition for quantity.

Littoral Combat Ship (LCS)

LCS will be a fast, agile and networked surface combatant with capabilities optimized to assure naval and Joint force access into contested littoral regions. LCS will operate with focused-mission packages that deploy manned and unmanned vehicles to execute a variety of missions, including anti-submarine warfare (ASW), anti-surface warfare (SUW) and mine countermeasures (MCM). LCS will also possess inherent capabilities to support homeland defense, Maritime Interception Operations (MIO) and Special Operation Forces.

The Navy remains committed to the LCS program, and LCS remains a critical warfighting requirement for our Navy to maintain dominance in the littorals and strategic choke points around the world. However, the Navy identified significant cost increases on the order of 100% for the lead ships in the LCS Class, due to unrealistic contractor proposals, development difficulties and changes from a commercial baseline. The Navy believes that active oversight

and strict cost controls are needed to deliver these ships to the fleet over the long term. The Navy demonstrated strong oversight when it terminated the contracts for LCS 3 and LCS 4 in 2007.

It is vital that the Navy continue through first-of-class construction challenges to complete LCS 1 and LCS 2. When these ships are delivered, the Department will be able to better evaluate their costs and capabilities. LCS 1 and LCS 2 are currently scheduled to deliver to the Navy in 2008. Both LCS 1 and LCS 2 will conduct post-delivery test and trials in 2009. The end costs included in the FY 2009 President's Budget request for LCS reflects the current estimates for LCS 1 and LCS 2 end cost. However, on February 25, 2008, after the submission of the President's Budget to Congress, General Dynamics submitted to the Navy an over target baseline request for LCS 2. The Navy is reviewing the request prior to granting approval for General Dynamics to implement. The details of that request are business sensitive and proprietary. The Navy will continue to actively monitor LCS 1 and 2 cost and schedule performance and to keep the Office of the Secretary of Defense and Congress informed of those estimated costs. The Navy will seek congressional support to complete the reprogramming of FY 2007 LCS shipbuilding funds to complete LCS 1 and 2.

The FY 2009 President's Budget request includes $920 million for two additional LCS seaframes. The Navy also intends to execute the FY 2008 appropriation for one seaframe, utilizing the remaining funding and material from the terminated ships. The Navy will also seek congressional support for the reprogramming of these funds for the FY 2008 procurement. Under an acquisition strategy approved in January 2008 by the Defense Acquisition Executive, the FY 2008 and 2009 awards will be for fixed-price incentive fee contracts, based on a limited competition between the current LCS seaframe prime contractors. These ships will be designated as Flight 0+ and will include all existing approved engineering changes developed from lessons learned, along with any current improvements to construction or fabrication procedures. The Navy will incorporate further lessons learned from LCS 1 and 2 sea trials into these ships prior to production. Any such changes will be minimized to those essential for safety and/or operability.

Acquisition strategies for FY 2010 and follow ships are under Navy review. OSD will conduct a Milestone B prior to FY 2010 procurement. The Navy and OSD will consider the questions of single seaframe assessment and competition plans as part of the FY 2010 acquisition strategy deliberations.

Lewis and Clark Class Dry Cargo / Ammunition Ship (T-AKE)

T-AKE was designed to replace the Navy's aging combat stores (T-AFS) and ammunition (T-AE) shuttle ships. Working in concert with an oiler (T-AO), the team can perform a "substitute" station ship mission which will provide necessary depth in combat logistics. The contract was restructured in July 2007 after the submission of the FY 2008 President's Budget. This approach benefited both the Navy and the shipbuilder. By restructuring the contract to include the existing nine plus the additional five ships the Navy procured the entire class at the lowest overall cost per hull. Fourteen T-AKE hulls are covered under a fixed-price incentive contract with General Dynamics National Steel and Shipbuilding Company (NASSCO).

The FY 2009 President's Budget request provides for procurement of two T-AKEs in the National Defense Sealift Fund under a fixed-price incentive contract with General Dynamics National Steel and Shipbuilding Company (NASSCO). The Navy has committed to procure the minimum number of T-AKEs necessary to meet the Combat Logistic Force (CLF) requirement, currently assessed to be 12 T-AKEs. When MPF(F) T-AKE assets are considered in logistics planning for major combat operations, the CLF requirement drops to 11 T-AKEs, enabling the transfer of the 12th CLF T-AKE to the MPF(F). The current budget does not include the 13th or 14th T-AKEs required to meet the MPF(F) structure described above, pending completion of an ongoing MPF(F) concept of operations study.

Major accomplishments for the year include the christening of T-AKE 4 (RICHARD E. BYRD) in May 2007 and the delivery of T-AKE 3 (USNS ALAN SHEPARD) in June 2007 and T-AKE 4 in November 2007. T-AKE 5 (ROBERT E. PEARY) launched in October 2007. Progress continues on the follow on ships including the keel laying for T-AKE 6 (AMELIA EARHART) in June 2007 and T-AKE 7 in November 2007. T-AKE 8 commenced construction in October 2007. The construction contract option for the T-AKE 10 and long lead time material for the T-AKE 11 were exercised in January 2008. The FY 2009 President's Budget request provides funding for two T-AKEs (T-AKE 11 and 12) in the National Defense Sealift Fund.

Joint High Speed Vessel (JHSV)

High speed connectors will facilitate the conduct of sustained sea-based operations by expediting force closure and allowing the persistence necessary for success in the littorals. Connectors are grouped into three categories: (1) inter-theater; (2) intra-theater, the Joint High Speed Vessel (JHSV) that enables rapid closure and sustainment of Marine forces; and (3) the Joint Maritime Assault Connector, to move troops and resources from the sea base to shore. These platforms will link bases and stations around the world to the sea base and other advanced bases, as well as provide linkages between the sea base and forces operating ashore. JHSV is currently in the Technology Development Phase. The Capabilities Development Document was JROC-approved in January 2007. Milestone B is anticipated in FY 2008 with delivery of the first vessel in 2011. The FY 2009 President's Budget request includes $186.8 million for the construction and R&D for the first Navy funded JHSV and $173.0 million for the second Army funded vessel.

The Navy also continues with important new construction and modernization programs. These programs are outlined below.

CVN 21

CVN 78, the lead ship of the CVN 21 program will replace USS ENTERPRISE (CVN 65). CVN 21 warfighting capability improvements include: 25% increase in sortie generation rate, ship's force reduction approaching 800 billets with an additional 400 billets reduction including airwing and embarked staff, nearly three-fold increase in electrical generating capacity, restoration of Service Life Allowances, and enhanced Integrated Warfare System to pace future

threats. These capability improvements will ensure that the CVN, the centerpiece of the Navy's Carrier Strike Group, continue to pace projected threats. The major critical technologies and capabilities planned for integration into the lead ship include: Electromagnetic Aircraft Launch System, Advanced Arresting Gear, Joint Precision Aircraft Landing System, Improved Survivability, Enhanced Flight Deck and Improved Weapon and Material Handling.

The FY 2007 National Defense Authorization Act authorized the Navy to enter into Construction Contracts for the first three ships of the CVN 78 Class and provided for four-year funding of the first three ships beginning with construction of the GERALD R. FORD (CVN 78) in FY 2008. Non-recurring investment in the class design is $5.7 billion and the cost of the lead ship (excluding all non-recurring costs) is $8.1 billion ($TY), nearly $300 million less than the projected cost to buy a NIMITZ Class aircraft carrier in the same time-frame. The President's Budget request for FY 2009 included $2.7 billion as the second of the four funding increments planned for CVN 78. The Navy released the Request for Proposal for Detail Design and Construction of the lead ship in July 2007 and NGNN responded with their contract proposal on October 31, 2007. Contract negotiations are on-going.

CVN 68 Class

GEORGE H.W. BUSH (CVN 77), is the 10th and final NIMITZ Class nuclear powered aircraft carrier. The construction of CVN 77 has proceeded rapidly following the launch in October 2006. The aircraft catapults began testing in January of this year by 'launching' dead-loads. Sea trials will commence this fall. The GEORGE H.W. BUSH is expected to deliver near the end of this calendar year. The commissioning date has been set for January 10, 2009. The President's Budget for FY 2009 requests $20.5 million for the completion of government responsible mission critical and safety system installations reflecting operational needs to deploy the GEORGE H.W. BUSH at a readiness condition appropriate for the defense of America's freedom. The program remains within the congressionally enacted $6,057 million cost limitation.

CVN 68 Class Refueling Complex Overhaul (RCOH)

The CVN 68 Class RCOH program spans 40+ years across the NIMITZ Class. During each RCOH, 35% of a carrier's total Service Life Maintenance plan is performed, as well as depot level mid-life recapitalization that extends the service life of NIMITZ-Class carriers out to approximately 50 years. Refueling of the ships' nuclear reactors, warfighting modernization, and repair of ship systems and infrastructure are also completed to meet future missions. These combined upgrades support a reduction in operating costs, achieve expected service life, and allow the NIMITZ Class to deter projected threats well into the 21st century. This program is critical for the class to achieve its service life and retain combat relevance. The President's Budget for FY 2009 requests $628.0 million which includes $124.5 million in Fiscal Year 2009 to facilitate the acceleration of the execution start date for USS THEODORE ROOSEVELT (CVN 71) to September 2009, and $21.4 million advance procurement for USS ABRAHAM LINCOLN (CVN 72) RCOH. This acceleration provides additional two months of operational availability to the carrier fleet during the critical 2012-2015 period before the commissioning of

the GERALD R. FORD (CVN 78) and adds approximately one million man hours to NGNN's FY 2009 workload keeping 300 NGNN skilled workers employed.

WASP (LHD 1) Class Amphibious Assault Ship

The WASP (LHD 1) Class comprises multi-purpose amphibious assault ships whose primary mission is to provide embarked commanders with command and control capabilities for sea-based maneuver/assault operations as well as employing elements of a landing force through a combination of helicopters and amphibious vehicles. Seven LHDs have been delivered to the fleet. The last of the LHD 1 Class, USS MAKIN ISLAND (LHD 8), is scheduled to be delivered in November 2008. Although a modified repeat of the previous seven ships, this ship introduced gas turbine propulsion system with all electric auxiliary systems and eliminated the steam plant and steam systems.

LHA (R) General Purpose Amphibious Assault Ship (Replacement)

The LHA (R) Assault Echelon ships will provide the Nation with forcible entry capability and forward deployed contingency response forces. These ships will provide enhanced hangar and maintenance spaces to support aviation maintenance and increased jet fuel storage and aviation ordnance magazines. The LHA (R) Assault Echelon ship is the functional replacement for the aging LHA 1 Class ships that reach the end of their extended service life in 2011-2015. The Detail Design and Construction contract for the lead ship, LHA 6, was awarded on June 1, 2007 with a contract delivery date of August 31, 2012.

LPD 17 Class Amphibious Warfare Ship

The LPD 17 SAN ANTONIO Class of amphibious warfare ships represents the Department of the Navy's commitment to a modern expeditionary power projection fleet that will enable our naval force to operate across the spectrum of warfare. The Navy took delivery of the first LPD 17 in the summer of 2005, and operational evaluation began in the spring of 2007. LPD 18 (USS NEW ORLEANS) and LPD 19 (USS MESA VERDE) were commissioned in March 2007 and December 2007, respectively. LPD 19 will undergo shock trials this summer. There are five ships currently under construction. LPD 20 (GREEN BAY) is expected to deliver this year, and LPD 21 (NEW YORK) was christened on March 1, 2008. LPDs 22-24 are in various stages of the construction phase, and the option for construction of LPD 25 was exercised on December 21, 2007. By addressing the 10th LPD in the FY 2010 budget development process, the Navy will still be able to leverage a warm production line, albeit with inherent inefficiencies. However, with competing priorities within DoD there is no guarantee that this 10th ship will be appropriated. Significant efforts are required to begin planning for the possibility that the line will be closed as we near the LPD 25 delivery in 2012. Starting in FY 2009, the Navy will begin to cover infrastructure like costs related to the LPD 17 production design. Closeout costs would also be used for shutdown/disposal of special tooling and/or test equipment, particularly for unique Contractor Furnished Equipment/Government Furnished Equipment items. Environmental impact assessments will be required as Northrop Grumman Shipbuilding looks to consolidate excess infrastructure across the yard.

The FY 2009 President's Budget request includes funding for program closeout efforts required after delivery of the last LPD 17 Class ship. The SAN ANTONIO Class ship replaces four classes of older ships — the LKA, LST, LSD 36, and the LPD 4 — and will have a forty-year expected service life. SAN ANTONIO Class ships will play a key role in supporting the ongoing Global War on Terror by forward deploying Marines and their equipment to respond to crises abroad.

Maritime Prepositioning Force (Future) (MPF(F))

MPF(F) provides a scalable, joint, sea-based capability for the closure, arrival, assembly and employment of up to a MEB-sized force. It will also support the sustainment and reconstitution of forces when required. MPF(F) is envisioned for frequent utility in Humanitarian Assistance / Disaster Relief, Non-combatant Evacuation Operations, Theater Security Cooperation, and other Littoral Combat Operations as well as major combat operations. When coupled with an Expeditionary Strike Group or Carrier Strike Group, MPF(F) will provide the Nation with a highly flexible operational and logistics support capability that enables rapid reinforcement of the Assault Echelon of an Amphibious Force in anti-access or denial environments. In March 2006, the Defense Acquisition Board approved program entry into the Technology Development Phase. An R&D plan is currently being executed and the program is progressing on track. The MPF(F) squadron composition leverages existing platforms and includes one new design ship, the Mobile Landing Platform (MLP). The FY 2009 President's Budget request includes $41.8 million R&D for ongoing risk reduction and technology development, and advance procurement for the FY 2010 MPF Aviation Ship.

DDG 51 Class Ships

The DDG 51 Class is a 62-ship class that was developed in three incremental flights, with upgraded technology and capability built into each subsequent hull. All 62 ships in the class have been authorized and appropriated. Ships are being constructed at both Northrop Grumman Shipbuilding and General Dynamics Bath Iron works. A total of 53 ships have been delivered to the Navy. The final ship, DDG 112, is scheduled for delivery in FY 2011.

DDG Modernization

The DDG 51 modernization program is a comprehensive sixty-two ship program designed to modernize the Hull, Mechanical, and Electrical (HM&E) and Combat Systems. These combined upgrades support a reduction in manpower and operating costs, achieve expected service life, and allow the class to pace the projected threat well into the 21st century. This program is critical for the class to achieve its service life and retain combat relevance.

The first DDG to be modernized will be DDG 51 with an HM&E availability in FY 2010. Congress provided additional funds to this program with $50 million SCN in FY 2005, $50 million in SCN in FY 2006, and $30 million in OPN in FY 2007. The HM&E alterations are

being developed in SCN new construction in order to minimize development costs and mitigate technical and schedule risk. The President's Budget for FY 2008 included the addition of robust war fighting upgrades. The President's Budget request for FY 2009 includes $326 million which supports the Flight I and II ship modernizations starting in FY 2010.

Cruiser Modernization

Twenty-two Cruisers remain in service and are planned for modernization. A comprehensive Mission Life Extension is critical to achieving the ship's expected service life and includes the All Electric Modification, SMARTSHIP, Hull Mechanical & Electrical system upgrades and a series of alterations designed to restore displacement and stability margins, correct hull and deck house cracking and improve quality of life and service onboard. Cruiser Modernization bridges the gap to future surface combatants and will facilitate a more rapid and affordable capability insertion process. The first full modernization is CG 52 commencing in February 2008. The President's Budget request for FY 2009 includes $427 million which will modernization two cruisers.

CG(X)

CG(X) is envisioned to be a highly capable surface combatant tailored for Joint Air and Missile Defense and Joint Air Control Operations. CG(X) will provide airspace dominance and Sea Shield protection to Joint forces. The Maritime Air and Missile Defense of Joint Forces (MAMDJF) Initial Capabilities Document (ICD) was validated by the Joint Requirements Oversight Council (JROC) in May 2006. Under the Navy's current program of record, the program procures its first ship in FY 2011 with follow-on construction in FY 2013.

The results of the Navy's Analysis of Alternatives (AoA) for the Maritime Air and Missile Defense of Joint Forces capability are currently within the Navy staffing process. Resulting requirements definition and acquisition plans, including schedule options and associated risks, are being evaluated in preparation for CG(X) Milestone A, planned to occur in FY 2008. This process includes recognition of the requirement of the FY 2008 National Defense Authorization Act, that all major combatant vessels of the United States Navy strike forces be constructed with an integrated nuclear power plant, unless the Secretary of Defense determines this not to be in the best interest of the United States.

Regardless of the Navy's selection of a particular preferred alternative, vital research and development efforts must continue in FY 2009. These engineering development and integration efforts include systems engineering, analysis, computer program development, interface design, Engineering Development Models (EDMs), technical documentation and system testing to ensure a fully functional CG(X) system design. The FY 2009 President's Budget request will continue maturation of the CG(X) design based on the preferred alternative selected.

OHIO Class SSGN Conversion

The OHIO Class SSGN Conversion Program continues to be a successful transformational program. All four ships, USS OHIO (SSGN 726), USS FLORIDA (SSGN 728), USS MICHIGAN (SSGN 727), and USS GEORGIA (SSGN 729), have been delivered to the Fleet. The SSGNs completed their Operational Evaluation and had its Initial Operational Capability declared on November 1, 2007. Additionally, USS MICHIGAN will complete testing with the Advanced SEAL Delivery System (ASDS) in March 2008. USS OHIO, the first SSGN to complete conversion, is now deployed in the Pacific Ocean and has already conducted its first crew exchange in Guam.

SSBN Engineered Refueling Overhauls (EROs)

The OHIO Class SSBN Engineered Refueling Overhaul Program (ERO) will continue with the FY 2009 authorization for the start of the industrial period for the fifth submarine, USS TENNESSEE (SSBN 734). In addition, FY 2009 includes advance procurement funding for USS PENNSYLVANIA (SSBN 735) and USS WEST VIRGINIA (SSBN 736) which will start in FY 2010 and FY 2011, respectively. These EROs are the one time depot maintenance period near the mid-point of the SSBN service life, where the nuclear reactor is refueled, major equipment is refurbished, class alterations are installed, and SUBSAFE unrestricted operations maintenance is accomplished.

Ship Inactivations

The Navy remains committed to reducing and eliminating any environmental risks posed by its inactive ships by reducing the size of the inactive ship inventory. This inventory has been reduced from a high of 195 ships in 1997 to 62 ships today. The Navy plans to decommission 29 ships between FY 2009 and FY 2013, of which 23 will be designated for disposal upon decommissioning and six will be retained for future mobilization purposes.

The Navy utilizes six disposal methods to reduce the inventory of non-nuclear inactive ships, including Foreign Military Sales transfers; interagency transfers to the Maritime Administration, US Coast Guard or other agencies; donations for memorial/museum use; domestic dismantling; experimental use/Fleet training sink exercises; and ship reefing. While fleet training sink exercises are not a disposal method, since the primary purpose is weapons effectiveness testing or Fleet training, it does contribute to inventory reduction.

Summary

The Navy is committed to ensure fiscal responsibility in shipbuilding acquisition and modernization programs.

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HOUSE ARMED SERVICES COMMITTEE

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

NOT FOR PUBLICATION
UNTIL RELEASED BY
HOUSE ARMED SERVICES COMMITTEE

Chairman Taylor, Ranking Member Bartlett, distinguished members of the subcommittee, thank you for the opportunity to appear before you today. As requested, this statement discusses the following:

- the implications of the Navy's FY2009 shipbuilding plan for reaching and maintaining the Navy's planned 313-ship fleet (pages 1-8);
- the potential effect on the shipbuilding plan if DDG-1000s experience significant cost growth (pages 8-9);
- potential options for changing the mix of ships procured so as to increase the number of Navy ships procured in the near term (pages 9-11);
- procuring additional DDG-51s instead of additional DDG-1000s (pages 11-13);
- the CG(X) program (page 13);
- issues relating to ships funded through the National Defense Sealift Fund (NDSF) (pages 13-16); and
- Navy capabilities needed to counter a future Western Pacific threat (pages 16-20).

Implications of FY2009 Shipbuilding Plan for Reaching and Maintaining 313-Ship Fleet

The FY2009 ship building plan — which in this statement refers to both the five-year (FY2009-FY2013) and 30-year (FY2009-FY2038) shipbuilding plans — contains a number of features with implications for reaching and maintaining the Navy's planned 313-ship fleet.

Roughly 40% Increase In Estimated Cost For 30-Year Plan

One of the most significant features in the FY2009 shipbuilding budget submission, compared to the FY2008 submission, is an apparent increase of roughly 40% in real (inflation-adjusted) terms in the Navy's estimated average annual cost to implement the 30-year shipbuilding plan.[1] This

[1]The Navy last year estimated that the FY2008-FY2037 plan would cost an average of $14.4 billion per year in FY2007 dollars. The Navy's estimated cost for the FY2009-FY2038 plan appears to be roughly $20.1 billion per year in FY2007 dollars, or roughly 40% more. The Navy's estimate for the first 12 years of the plan (FY2009-FY2020) has increased to $15.8 billion per year in FY2007 dollars — an increase of about 9.7%. Its estimate for the final 18 years of the plan (FY2021-FY2038) appears to have increased to about $22.9 billion per year in FY2007 dollars — an increase of roughly 59%. (Although the Navy's report on the (continued...)

roughly 40% real increase is not due to significant changes in the composition of the 30-year plan, because the types and quantities of ships to be procured under this year's (FY2009-FY2038) 30-year plan are generally the same as those in last year's (FY2008-FY2037) 30-year plan.[2]

As discussed further below, the Navy's report on the FY2009 30-year plan states that the Navy's cost estimate excludes the cost of the 12 replacement ballistic missile submarines (SSBNs) that are shown in the plan. Depending on the cost one assumes for these 12 SSBNs, including their cost might increase the roughly 40% figure in the previous paragraph to roughly 49% to 57%.[3]

In 2007, the Congressional Budget Office (CBO) estimated that last year's version of the 30-year plan would cost roughly 35% more per year to implement than the Navy was estimating. The Navy in 2007 downplayed CBO's higher cost estimate, referring to it in testimony as "worst-case analysis"[4] or as an "extremely conservative" estimate.[5] The Navy's new estimated cost for the FY2009 30-year plan, however, is now comparable to CBO's estimates for last year's plan.

In 2006 and 2007, CRS and CBO discussed in reports and testimony how the Navy's strategy for executing the shipbuilding plan depended on a series of five assumptions concerning the future size and composition of the Navy's budget and the costs of future Navy ships. As noted by both CRS and CBO in 2006 and 2007, all five of these assumptions could be viewed as risk items for the plan, because there were grounds for questioning whether each of them would be borne out.[6]

Although the Navy's strategy in 2006 and 2007 for executing the 30-year shipbuilding plan depended on a series of assumptions that could be viewed as risks, the Navy was nevertheless able to say that it had a strategy for generating the shipbuilding funds needed to implement the plan. That situation may now have changed: The Navy's new estimated cost for the 30-year plan is so much higher than the Navy's estimate last year that the Navy no longer appears to have a clearly identifiable announced strategy for raising the shipbuilding funds needed to execute the 30-year plan.

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[1](...continued)
30-year plan does not state an estimated average annual cost for the 18 later years of the plan, visual inspection of a graph in the report (Figure 1) suggests that the average figure for this period is roughly $22.9 billion a year in FY2007 dollars.) An average of $15.8 billion per year for 12 years and $22.9 billion per year for 18 years works out to a 30-year average of about $20.1 billion per year

[2]The FY2009-FY2038 plan includes 296 ships, or about 1.7% more than the 291 ships in the FY2008-FY2037 plan. The types of ships procured under the two plans are essentially the same, and the total numbers of each type being procured are similar.

[3]Using Navy and Congressional Budget Office (CBO) estimates for the cost of these SSBNs as presented in CBO testimony to this subcommittee on July 24, 2007, including the costs of 12 replacement SSBNs could increase the estimated cost of the 30-year plan by about $1.3 billion per year (using the Navy's estimate) to about $2.5 billion a year (using CBO's estimate).

[4]Source: Transcript of spoken testimony of Vice Admiral Paul Sullivan before the Seapower and Expeditionary Forces subcommittee of the House Armed Services Committee on March 20, 2007.

[5]Source: Transcript of spoken testimony of Allison Stiller before the Defense subcommittee of the House Appropriations Committee on April 25, 2007.

[6]See, for example, CRS Report RL32665, *Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress*, by Ronald O'Rourke.

Although the Navy, industry, and Congress can take various steps to minimize shipbuilding costs,[7] the magnitude of the Navy's apparent ship recapitalization financing challenge suggests that implementing the 30-year plan without reducing resources for other Navy priorities would likely require adding billions of dollars per year to the Navy's budget in coming years.

The Navy's apparent ship recapitalization financing challenge appears broadly similar to the Air Force's aircraft recapitalization financing challenge. But while the Navy and Air Force may be similar in terms of facing major financing challenges for recapitalizing their primary platforms, the two services are strikingly different in terms of how they are responding to that situation. The Air Force is responding by stating directly and repeatedly that the Air Force budget needs to be increased by about $20 billion per year for the next five years.[8] The Navy, in contrast, has studiously avoided asking for an increase to its programmed budget in recent years and stated instead that it will be able to finance its recapitalization goals by reducing other costs and operating more efficiently.

Consistent with its stated need for a $20-billion increase to its annual budget, the Air Force has submitted an FY2009 unfunded requirements list (URL) totaling $18.75 billion. This is more than four times the total in the FY2009 Navy URL ($4.59 billion), and more than three times the combined total in the FY2009 Navy and Marine Corps URLs ($5.90 billion, after adjusting for the presence of the same LPD-17 class amphibious ship in both the Navy and Marine Corps URLs).

The total additional funding discussed by Air Force officials — $100 billion over five years — would be enough to pay for roughly 45 ships in the Navy's 30-year shipbuilding program, according to the Navy's estimated cost for the 30-year plan, or roughly 4.5 years of the 30-year plan.[9]

The difference between the Air Force and Navy in terms of discussing the need for an increased budget is potentially significant. In a situation where two services both face significant recapitalization financing challenges, if one service is vocal about the need for a budget increase

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[7]Available measures include things such as:
— achieving year-to-year stability in shipbuilding plans,
— maintaining discipline in establishing and avoiding subsequent changes in ship requirements,
— achieving increased commonality between ship designs, including commonality in hulls as well as components,
— avoiding concurrency in design and construction;
— avoiding schedule-driven programs with compressed schedules;
— using competition where possible,
— using contracts with robust incentives for controlling costs,
— optimizing production among yards owned by a common parent firm,
— investing in improved production facilities,
— using multiyear procurement (MYP) or block buys,
— using incremental funding to avoid or mitigate budget spikes that can disrupt production profiles, and
— ensuring accountability in the execution of programs.

[8]See, for example, Gordon Lubold, "Air Force Argues For More Money," *Christian Science Monitor*, March 11, 2008; and Frank Oliveri, "A Budget Battle Takes Wing," *CQ Weekly*, March 10, 2008.

[9]Assuming an additional $1.9 billion per year over 30 years for procuring the 12 replacement SSBNs in the 30-year plan (i.e., an average unit cost of $4.75 for the 12 SSBNs), the Navy's total estimated cost for executing the 30-year plan appears to be about $660 billion ($22 billion per year times 30 years). A sum of $100 billion would pay for about 15.2% of these 296 ships, or 44.85 ships, or 4.55 years of the 30-year plan.

while the other is not, policymakers could develop an unbalanced understanding of the relative funding needs of the two services.

13 Fewer Ships in FY2009-FY2013

This year's shipbuilding submission includes 47 new construction ships in FY2009-FY2013 — a reduction of 13 ships, or about 22%, from the 60 new-construction ships that were planned for FY2009-FY2013 under the FY2008 shipbuilding plan. Most of the 13-ship reduction is due to an 11-ship reduction in the number of Littoral Combat Ships (LCSs) planned for FY2009-FY2013, which is a consequence of the Navy's restructuring of the LCS program.

3-Year Delay in Reaching 313 Ships

Under the FY2009 shipbuilding plan, the Navy is to reach a total of at least 313 ships in FY2019 — 3 years later than under the FY2008 shipbuilding plan. The 13-ship reduction in FY2009-FY2013 in the FY2009 plan appears to be a primary cause of this 3-year delay.

Shortfalls Relative to 313-Ship Goals

This year's 30-year shipbuilding plan, like the two previous ones, does not include enough ships to fully support all elements of the planned 313-ship force structure over the long run. As shown in **Table 1** below, however, the projected shortfall in the 30-year plan relative to the 313-ship force structure has been reduced from about 39 ships two years ago to 13 ships today.

Table 1. Projected Shortfall Relative to 313-Ship Force Structure

Projected shortfall by ship type, in numbers of ships, under the 30-year shipbuilding plan of...	Feb. 2006 (FY07-FY36)	Feb. 2007 (FY08-FY37)	Feb. 2008 (FY09-FY38)
Amphibious ships	1	1	0[a]
Cruise missile submarines (SSGNs)	4	4	4
Attack submarines (SSNs)	8	8	7
Cruisers and destroyers	~26	~10	0
MPF(F) ships	0	0	2
Total projected shortfall	~39	~26	13

Source: CRS analysis of Navy data.

a. Although the February 2008 30-year plan would support a force of 32 or 33 amphibious ships, as opposed to 31 called for in the 313-ship plan, the 32- or 33-ship force would include nine LPD-17 class ships, as opposed to the 10 called for in the 313-ship plan. The Marine Corps states that fully meeting the requirement for an amphibious force capable of lifting the assault echelons of 2.0 Marine Expeditionary Brigades (MEBs) would require a 33-ship amphibious force that includes 11 LPD-17s.

The reduction in the projected shortfall from about 39 ships two years ago to about 26 ships last year was due in large part to the insertion of additional destroyers into the final years of last year's 30-year plan. The reduction in the projected shortfall from about 26 ships last year to 13 ships this year is due in large part to a new assumption in this year's plan of a 5-year service life extension

(from 35 years to 40 years) for all 62 DDG-51 class destroyers, and additional service life extensions for four amphibious ships.

Although the FY2009 30-year plan assumes a 5-year service life extension for the DDG-51s, a Navy official was quoted after the FY2009 30-year plan was released as stating that the Navy has not yet officially approved the idea of extending the service lives of those ships.[10] One potential oversight issue for the subcommittee is why the 30-year plan assumed a 5-year service life extension for the DDG-51s if the Navy had not yet officially approved the idea. If the Navy approves the idea, a second potential oversight issue for the subcommittee is whether the Navy will actually be able to extend the service lives of the DDG-51s and operate them in a cost-effective manner for 40 years, given the wear and tear that might accrue on the ships in coming years, as well as the DDG-51 design's space, weight, and electrical-power capacities. If a 5-year service life extension for the DDG-51s proves infeasible or not cost-effective, a shortfall in cruisers and destroyers similar to that shown in the February 2007 column in **Table 1** might reappear.

10th LPD-17 and the Amphibious Force

The 313-ship plan calls for a total of 10 San Antonio (LPD-17) class amphibious ships. Congress, as part of its action on the FY2008 defense budget, provided $50 million in advance procurement funding for a 10th LPD-17 to be procured in a fiscal year after FY2008. The FY2009 shipbuilding plan, like last year's shipbuilding plan, does not include a 10th LPD-17, and calls for ending LPD-17 procurement with the ninth ship, which was procured in FY2008. A 10th LPD-17, at a cost of $1,700 million, is the number-two item on the Navy's FY2009 URL and the first item presented in the Marine Corps' FY2009 URL. Although items in the Marine Corps' FY2009 URL are not explicitly prioritized, the Marine Corps has testified that the 10th LPD-17 is the services' number-one priority in the URL.[11]

The FY2009 30-year shipbuilding plan would support a force of 32 or 33 amphibious ships, as opposed to a total of 31 called for in the 313-ship plan. This 32- or 33-ship force, however, would include nine LPD-17s, as opposed to the 10 called for in the 313-ship plan. The Marine Corps states that fully meeting the requirement for an amphibious force capable of lifting the assault echelons of 2.0 Marine Expeditionary Brigades (MEBs) would require a 33-ship amphibious force that includes 11 LPD-17s.[12] The Commandant of the Marine Corps has testified that:

> we've had some tremendous discussions with the Navy. We have come to an agreement on the numbers of [amphibious] ships, 33 [in inventory] to make 30 operational ships in order to give our nation that very necessary capability.
>
> And the Navy has looked at a way to extend some older ships that give us that 30 number for some period on through the FYDP, the five-year defense plan.

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[10]Zachary M. Peterson, "Destroyer Extension Part of 313-Ship Plan," *NavyTimes.com*, February 11, 2008.

[11]Source: Transcript of spoken testimony of Lieutenant General James Amos before the Seapower and Expeditionary Forces subcommittee of the House Armed Services Committee on February 27, 2008.

[12]The 33-ship force that would fully meet the 2.0 MEB lift requirement includes 11 large-deck amphibious assault ships (LHAs/LHDs), 11 LPD-17s, and 11 LSD-41/49 class amphibious ships.

> Our only concern[13] with it, however, is that we have already, through previous agreement, [with] previous CNOs, and previous commandants, agreed on the 30 ships. That still represents about a 20 percent shortfall that those [Marine expeditionary] brigade footprints would require.
>
> If we go with the old ships instead of newer ships, that shortfall becomes about 29 percent.
>
> And we think there's a risk inherent with that that just concerns us greatly with the ability to provide that kind of capability to the nation.
>
> Ergo, it [the 10th LPD-17] being our number one unfunded priority.[14]

Table 2 shows the Marine Corps' calculation of the amount of amphibious lift, in MEB equivalents, resulting from the 32- or 33-ship amphibious force that is projected in the Navy's FY2009 30-year shipbuilding plan. The table presents the five different elements of amphibious lift. In the table, a figure of 2.0 in a cell would meet the 2.0 MEB lift goal for that lift element, a figure of 1.0 would meet 50% of the goal for that element, and a figure of 1.5 would meet 75% of the goal for that element. As can be seen in the table, the Marine Corps projects significant shortfalls in certain lift elements, particularly vehicles (measured in square feet of storage space) and vertical takeoff or landing (VTOL) aircraft spots.

Table 2. Amount of Amphibious Lift, in MEB equivalents, Resulting From Amphibious Force Projected in FY2009 Navy 30-Year Shipbuilding Plan

	2008	2009	2010	2015	2020	2025	2030	2035
Troops	1.46	1.35	1.38	1.45	1.42	1.35	1.49	1.59
Vehicle (sq. ft.)	0.77	0.75	0.80	0.90	0.88	0.93	1.05	1.17
Cargo (cu. ft.)	2.02	1.90	1.92	2.07	2.04	1.95	2.28	2.49
VTOL aircraft	1.02	0.93	0.94	1.07	1.06	0.97	1.18	1.31
LCACs	1.81	1.75	1.79	1.79	1.75	1.77	1.65	1.50

Source: U.S. Marine Corps data provided to CRS, March 11, 2008. Calculations are based on a MEB that is sized to be carried aboard 15 amphibious ships.

Additional Virginia-Class Submarine in FY2011

Congress, as part of its action on the FY2008 defense budget, provided $588 million in advance procurement funding for a second Virginia-class submarine to be procured in a year prior to FY2012. The Navy has included this additional submarine in its shipbuilding plan and scheduled it for full funding in FY2011. The addition of this submarine to the shipbuilding plan reduces the projected attack submarine shortfall from 8 boats to 7, and the projected duration of the shortfall from 14 years (FY2020-FY2033) to 12 years (FY2022-FY2033).

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[13]The transcript at this point has the word "certain," but this appears to have been an error in transcription.

[14]Source: Transcript of spoken testimony of General James Conway before the Senate Armed Services Committee on February 28, 2008.

Congress has the option of accelerating the full funding of this additional submarine from FY2011 to either FY2010 or FY2009. Doing so could make it possible to fund another one or two additional submarines in FY2011 and/or FY2010, which would further reduce the projected depth and duration of the shortfall. If the second Virginia-class boat now planned for FY2011 were fully funded in FY2009, construction of the ship would not begin as quickly as would normally be expected for a submarine funded in FY2009 due to the ship having been funded with less than two years of advance procurement funding. Congress, however, has funded certain ships in the past in the knowledge that construction on those ships would not begin right away.[15]

The Navy has stated that it placed the additional submarine in FY2011 rather than FY2010 in part because placing it in FY2010 would create a 2-1-2 procurement profile in FY2010-FY2012 and the Navy was concerned about "the perturbation that that would create for the industrial base."[16] The Navy made the same argument in testimony in 2007. As noted in CRS testimony to this subcommittee in 2007,[17] this argument may overstate the industrial-base problems of a 2-1-2 pattern. If two boats were procured in a given year, followed by one boat the next year — a total of three boats in 24 months — the schedule for producing the three boats could be phased so that, for a given stage in the production process, the production rate would be one boat every eight months. A production rate of one boat every eight months might actually help the industrial base make the transition from the current schedule of one boat every twelve months (one boat per year) to one boat every six months (two boats per year). Viewed this way, a 2-1-2 pattern might actually lead to some benefits in production efficiency on the way to a steady rate of two boats per year. The Navy's own 30-year SSN procurement plan, like its 30-year plan last year, calls for procuring SSNs in a 1-2-1-2 pattern in starting in FY2029.

Two Previously Planned TAKEs Dropped From FY2009 Plan

The FY2009 shipbuilding plan does not include two Lewis and Clark (TAKE-1) class dry cargo ships that were scheduled for procurement in FY2010 and FY2011 under last year's shipbuilding plan. These two TAKEs, which would be the 13th and 14th to be procured, would serve — along with one of the TAKEs scheduled for procurement in FY2009 (the 12th ship) — in the Navy's planned Maritime Prepositioning Force of the Future, or MPF(F), squadron for implementing the Navy-Marine Corps sea basing concept. The Navy states that the 13th and 14th TAKEs were dropped from the FY2009 shipbuilding plan pending completion of a study on the MPF(F) concept of operations,

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[15]Congress, for example, funded two nuclear-powered aircraft carriers (CVNs 72 and 73) in FY1983, and two more (CVNs 74 and 75) in FY1988. In each case, Congress did so in the knowledge that the second ship funded that year would not begin construction until some number of years after the first.

[16]Source: Spoken remarks of Secretary of the Navy Donald Winter at a March 6, 2008, hearing before the House Armed Services Committee on the FY2009 Department of the Navy budget. Secretary Winter also stated that procuring the submarine in FY2011 would permit the submarine to incorporate, as much as possible, cost-reducing design changes currently being implemented in the Virginia-class design. A Navy budget point paper provided to CRS and CBO on March 11, 2008, states that the ship was scheduled for procurement in FY2011 rather than FY2010 because this "allowed the Navy to balance anticipated resources with requirements and supports the 30-year shipbuilding plan."

[17]Statement of Ronald O'Rourke, Specialist in National Defense, Congressional Research Service, Before the House Armed Services Committee Subcommittee on Seapower and Expeditionary Forces Hearing on Submarine Force Structure and Acquisition Policy, March 8, 2007, p. 12.

and that the Navy expects that the study will show a need for the two ships.[18] If so, the two ships might be restored in next year's Navy shipbuilding plan.

Cost of 12 SSBNs Excluded From Navy's Cost Calculation

As mentioned earlier, the Navy, in its report on the FY2009 30-year shipbuilding plan, excluded the cost of the 12 replacement SSBNs that are shown in the plan from its calculation of the estimated cost to implement the plan. A potential oversight issue for the subcommittee is why the Navy chose to exclude the cost of these 12 ships from its estimate. The Navy's report on the 30-year plan does not explain why. When asked at the House Armed Services Committee's March 6, 2008, hearing why the Navy chose to do this, the Navy responded that since the design of the SSBNs has not yet been determined, it was difficult for the Navy to derive an estimate for the cost of these ships.[19] The later years of the 30-year plan include other new classes of ships whose designs have not been determined; the Navy included the estimated costs for these ships in its calculation. This raises a question as to why the costs of the SSBNs were treated differently than the costs for these other future ship classes.

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.

Potential Effect on Shipbuilding Plan If DDG-1000s Experience Significant Cost Growth

As part of its FY2009 shipbuilding plan, the Navy has increased its estimated combined procurement cost for the seven planned DDG-1000s by about 6.9%.[20] Even with this 6.9% increase, CBO believes the Navy is significantly underestimating DDG-1000 procurement costs. CBO testified in 2007 that it believed the first two DDG-1000s will each cost about 60% more than the Navy estimated last year, that the other five ships in the program would each cost about 75% more than the Navy estimated last year, and that the complete seven-ship class consequently would cost

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[18]Source: U.S. Department of the Navy, *Report to Congress on Annual Long-Range Plan for Construction of Naval Vessels for FY 2009*, p. 9.

[19]Source: Transcript of hearing.

[20]Under the FY2008 shipbuilding plan, the Navy estimated the combined end cost of the seven DDG-1000s at $18,185 million in then-year dollars; under the FY2009 shipbuilding plan, the Navy estimates their combined end cost at $19,136 million in then-year dollars. There is no change in the years in which the ships are to be procured.

about 70% more than the Navy estimated last year.[21] CBO's 2008 estimates for the DDG-1000 program are unchanged from its 2007 estimates.[22]

Under CBO's estimates, the first two DDG-1000s, instead of having a combined cost of about $6.3 billion in then-year dollars, as the Navy now estimates, might have a combined cost of roughly $10.2 billion in then-year dollars,[23] which would be an increase of roughly $3.9 billion in then-year dollars. The remaining five ships in the class, instead of having a combined procurement cost of about $12.8 billion in then-year dollars, as the Navy now estimates, might have a combined procurement cost of roughly $20.7 billion in then-year dollars,[24] which would be an increase of roughly $7.9 billion in then-year dollars. Under CBO's estimates, the combined cost growth for all seven ships would be roughly $11.8 billion in then-year dollars, which is a figure roughly comparable to the total amount of funding in Shipbuilding and Conversion, Navy (SCN) appropriation account in certain recent years.

Cost growth of this scale, if realized, would put significant added pressure on the Navy's shipbuilding budget. Accommodating such added pressure on the shipbuilding budget would require either adding billions of dollars to the shipbuilding account, or deferring or canceling other ships now planned for procurement in those years, or both.

Cost growth on DDG-1000s could also have implications for estimating procurement costs for CG(X) cruisers, particularly if those cruisers are based on the DDG-1000 hull or a modified version of that hull. The Navy's placeholder cost estimates in the FY2009 shipbuilding plan for the first two CG(X)s, which the Navy plans to procure in FY2011 and FY2013, appear consistent with, and may have been derived from, the Navy's current estimated cost for the first two DDG-1000s. Since the Navy plans to procure 19 CG(X)s between FY2011 and FY2023, if cost estimates for CG(X)s rise in proportion to CBO's higher cost estimates for DDG-1000s, it could put significant added pressure on the Navy's shipbuilding budget from the early years of the next decade into the 2020s.

Potential Options for Increasing the Number of Navy Ships Procured in the Near Term

The subcommittee asked that this statement address the question of options for changing the mix of ships procured so as to increase the total number of ships procured in the near tem. One

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[21] Statement of J. Michael Gilmore, Assistant Director for National Security, and Eric J. Labs, Senior Analyst, [on] The Navy's 2008 Shipbuilding Plan and Key Ship Programs, before the Subcommittee on Seapower and Expeditionary Forces, Committee on Armed Services, U.S. House of Representatives, July 24, 2007, pp. 14-16.

[22] CBO informed CRS on March 5, 2008, that CBO's 2008 cost estimates for DDG-1000 procurement costs are unchanged from its 2007 estimates (though CBO, for purposes of its own presentation this year, is converting those estimates from constant FY2008 dollars to constant FY2009 dollars).

[23] The figure of roughly $10.2 billion is last year's Navy estimate for the two ships of $6,370 million, plus about 60%.

[24] The figure of roughly $20.7 billion is last year's Navy estimate for the five ships of $11,815 million, plus about 75%.

option for doing this — an option that Representative John Murtha, chairman of the Defense subcommittee of the House Appropriations Committee, has stated that the Defense subcommittee is considering — would be to defer procurement of the third DDG-1000, which the Navy wants to procure in FY2009, and use the funding programmed for that ship to instead procure a 10th LPD-17 and the 13th and 14th TAKEs in FY2009.[25] This option would trade a single ship for three individually less expensive ships.

There are many similar potential options for the period FY2009-FY2013. DDG-1000s or other ships of equal of greater individual cost that are planned for procurement during these years could be traded for larger numbers of individually less expensive ships of various kinds. Under this approach, the DDG-1000s or other ships whose procurement is deferred could eventually be procured in later years. Options for the individually less expensive ships to procure in the near term (FY2009-FY2013) include the following:

- the 10th and 11th LPD-17s;
- the 13th and 14th TAKEs;
- additional DDG-51s;
- naval gunfire ships based on the LPD-17 hull design;[26]
- Littoral Combat Ships (LCSs) currently planned for later years;
- Navy versions of the Coast Guard's National Security Cutter (NSC);[27]
- Joint High-Speed Vessels (JHSVs) currently planned for later years;
- MPF(F) LMSRs[28] currently planned for later years; and
- MPF(F) MLPs[29] currently planned for later years.

Another variant of this approach would be to use funding programmed for DDG-1000s in FY2011-FY2013 to instead procure CG(X) cruisers currently planned for later years. This option would not increase the number of ships procured in FY2011-FY2013, but it would accelerate the introduction of CG(X) capabilities (including ballistic missile defense capabilities) into the fleet.

Another variant of this approach would be to use the funding programmed for DDG-1000s to instead procure an equal number of additional Virginia-class submarines. This option would not increase the total number of ships procured, but it would further mitigate the projected attack submarine shortfall. Funding for the third DDG-1000, for example, could be used instead to accelerate to FY2009 the full funding of the second Virginia-class submarine now scheduled for

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[25]Source: Transcript of February 27, 2008, hearing on Navy shipbuilding before Defense subcommittee of House Appropriations Committee. See also, for example, Dan Taylor, "Murtha Mulls Cutting DDG-1000, Adding Two T-AKE Ships and 10th LPD-17," *Inside the Navy*, March 3, 2008, and Ashley Roque, "Murtha, Young Press Navy on Shipbuilding Plan, Look to Alter 2009 Budget," *CongressNow*, February 27, 2008.

[26]Such ships, armed with two 155mm Advanced Gun Systems (AGSs), like the DDG-1000, have been suggested as procurement options by CBO and the Center for Strategic and Budgetary Assessment (CSBA).

[27]Such ships reportedly has been proposed by Northrop Grumman; see Christopher P. Cavas, "Northrop Offers NSC-Based Vessel To Fill LCS Delays," *Defense News*, January 14, 2008.

[28]Large, Medium-Speed Roll-on/Roll-off ships to be used in the Maritime Prepositioning Force of the Future squadron.

[29]Mobile Landing Platform ships to be used in the Maritime Prepositioning Force of the Future squadron.

FY2011, which could facilitate a follow-on option of procuring an additional Virginia-class boat in FY2011.

Another variant of this approach would be to use some of the funding programmed for the third DDG-1000 (or for another relatively expensive Navy ship) to procure one or two new polar icebreakers for the Coast Guard. As discussed in a CRS report, two of the Coast Guard's three polar icebreakers have now exceeded their 30-year design lives, and one of those two ships is not in operational condition. The Coast Guard estimates that new polar icebreakers built to a certain notional design might cost about $800 million to $925 million each to procure.[30] The Coast Guard's third polar icebreaker, Healy, was funded in the SCN account in FY1990.[31]

Navy officials have stated that they do not require additional DDG-51s, and do not have mission requirements that would be met by a Navy version of the NSC. Navy officials have also stated that changing the mix of ships procured could cause problems for the industrial base.

Procuring DDG-51s Instead of DDG-1000s

At a March 6, 2008, hearing before the House Armed Services Committee on the Department of the Navy's FY2009 budget, committee members indicated that they are considering the option of not procuring additional DDG-1000s and instead procuring additional DDG-51s. These DDG-51s, it was stated at the hearing, could act as a bridge to a CG(X) design based on an enlarged version of the DDG-51 hull and powered by one-half of the Ford (CVN-78) class reactor plant.[32] The subcommittee asked that this statement address the question of the number of DDG-51s that might be procured under this option, and how the capabilities of those DDG-51s would compare to those of the DDG-1000s.

Two variations on this option might be envisaged. One would use the funding programmed for the third through seventh DDG-1000s to procure additional DDG-51s. The other would use the funding programmed for the third and fourth DDG-1000s to procure additional DDG-51s, and the funding for the fifth through seventh DDG-1000s to procure CG(X)s currently planned for procurement in later years, so as to accelerate the introduction of CG(X)s into the fleet.

A total of $12,957 million is programmed in FY2009-FY2013 for the procurement of the third through seventh DDG-1000s.[33] Based on potential DDG-51 procurement costs provided by the Navy to Congress in 2007,[34] this sum might procure 8 DDG-51s.

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[30]CRS Report RL34391, *Coast Guard Polar Icebreaker Modernization: Background, Issues, and Options for Congress*, by Ronald O'Rourke.

[31]The FY1990 Department of Defense (DOD) Appropriations Act (H.R. 3072/P.L. 101-165 of November 21, 1989) provided $329 million for the procurement of Healy in the SCN account. (See pages 77 and 78 of H.Rept. 101-345 of November 13, 1989).

[32]Source: transcript of spoken remarks of Representatives Gene Taylor and Jim Saxton at the hearing.

[33]This figure does not include $150 million in FY2008 advance procurement funding for the third DDG-1000.

[34]The Navy stated in 2007 that the combined procurement cost for two DDG-51s procured in FY2008 would
(continued...)

A total of $5,217 million is programmed in FY2009 and FY2010 for the procurement of the third and fourth DDG-1000s.[35] Again based on potential DDG-51 procurement costs provided by the Navy to Congress in 2007, this sum might procure 3 DDG-51s.

The DDG-1000 and DDG-51 are both multimission destroyers, but they have somewhat different mission emphases. The DDG-1000 design features a stronger emphasis on land-attack operations and operations in littoral waters. The DDG-51 design is more oriented toward blue-water operations. Consistent with its larger size, higher procurement cost, and greater use of new technologies, the Navy believes the DDG-1000 is more capable than the DDG-51 design in several respects. For a detailed comparison of the two designs based primarily on information provided by the Navy to CRS in 2005, see **Appendix A** to this statement. Under the option discussed here, the greater individual capability of the DDG-1000 design in certain respects would be offset to some degree by the greater quantity of DDG-51s — 3 DDG-51s vs. 2 DDG-1000s, or 8 DDG-51s vs. 5 DDG-1000s.

Opponents of procuring DDG-51s instead of DDG-1000s might argue that the Navy has stated that it does not require additional DDG-51s. Supporters might argue that DDG-51s are multi-mission ships for which the Navy would find good uses, and that the Navy might discover in coming years that it needs additional Aegis-equipped ships to perform the Navy's emerging mission of ballistic missile defense.

DDG-51 procurement costs are fairly well understood due to the DDG-51's long production run, while DDG-1000 production cost estimates have not yet been validated through actual construction. On this basis, procuring DDG-51s might pose less risk in terms of potential cost growth than procuring DDG-1000s.

The option of procuring the DDG-51s would result in higher life-cycle crew-related costs due to both the larger size of the DDG-51 crew (about twice the size of the projected DDG-1000 crew) and the larger number of DDG-51s.

Procuring DDG-51s instead of DDG-1000s could increase work for firms that supply materials and components for DDG-51s but not DDG-1000s, and reduce work for firms that supply materials and components for DDG-1000s but not DDG-51s. The Navy informed CRS on March 11, 2008, that a DDG-1000 would require, by Navy estimates, about 2½ times as much shipyard labor to build as would building a DDG-51.[36] Based on this information, procuring 3 DDG-51s would provide 60% as much shipyard labor as procuring 2 DDG-1000s, and procuring 8 DDG-51s would provide 64% as much shipyard labor as procuring 5 DDG-1000s.

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[34](...continued)
be $3.0 billion to $3.1 billion. (Source: Navy information paper dated March 12, 2007.) The equivalent cost for procuring two DDG-51s in FY2009 might be a few percent higher due to an additional year of inflation and additional costs to restart elements of the DDG-51 production line that have closed over the last year.

[35]This figure does not include $150 million in FY2008 advance procurement funding for the third DDG-1000, and $51 million in FY2010 advance procurement funding programmed for the fifth DDG-1000.

[36]Source: Navy Office of Legislative Affairs telephone call to CRS on March 11, 2008.

The DDG-51s procured under this option could be built to a modified design with improved capabilities. The option of building DDG-51s to a modified design has been discussed in CRS reports since 1994.[37] Building DDG-51s to a modified design could affect the ships' procurement cost and increase the technology and cost risks associated with their procurement.

CG(X) Program

Although the Navy wants to procure the lead CG(X) in FY2011, the Navy has not yet announced a top-level design for the CG(X), meaning a basic scheme for the ship's size, hull design, and principal design features. Navy officials have stated that they are still examining requirements and design options for the ship. The absence at this point of an announced top-level design for the CG(X) raises at least two potential oversight questions for the subcommittee:

- Is the Navy leaving itself enough time, following the eventual announcement of a top-level CG(X) design, to do the remaining design work needed to support the procurement of a lead CG(X) in FY2011? Is the Navy, in other words, at risk of getting into a situation of having to rush the CG(X) design effort?

- Since a nuclear-powered CG(X) procured in FY2011 would normally receive advance procurement funding in FY2009, at what point would the continued passage of time without an announcement of a top-level design for the CG(X) impinge on the timely execution of the option of procuring a nuclear-powered lead CG(X) in FY2011?

Issues Relating to the National Defense Sealift Fund (NDSF)

The National Defense Sealift Fund (NDSF) was established by the FY1993 Defense Authorization Act, as amended by the FY1993 Defense Appropriations Act, to fund the construction of Department of Defense (DOD) sealift ships.[38] The provision in the U.S. Code governing the NDSF (10 USC 2218) was amended in 1999 to, among other things, permit the NDSF to also be used for the construction of combat logistics force ships (i.e., Navy underway replenishment ships)

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[37] A 1994 CRS report presented the option of building DDG-51s to a lengthened configuration with a total of 128 VLS cells, as opposed to the 96 on the current Flight IIA DDG-51 design. (See CRS Report 94-343 F, *Navy DDG-51 Destroyer Procurement Rate: Issues and Options for Congress*, by Ronald O'Rourke, pp. CRS-27 to CRS-28. [out of print; available directly from the author]) In more recent years, CRS has presented the option of building a ship based on a lengthened version of the DDG-51 hull, with a displacement of about 11,000 tons, as one possibility for a potential lower-cost cruiser-destroyer design. See, for example, Appendix B of CRS Report RL32109, *Navy DDG-1000 Destroyer Program: Background, Oversight Issues, and Options for Congress*, by Ronald O'Rourke.

[38] Section 1024 of the FY1993 Defense Authorization Act (H.R. 5006/P.L. 102-484 of October 23, 1992; see pages 178-181 of H.Rept. 102-966 of October 1, 1992, the conference report on the act), as amended by Title V of the FY1993 Defense Appropriations Act (H.R. 5504/P.L. 102-396 of October 6, 1992). Although P.L. 102-396 was signed into law before P.L. 102-484, the paragraph on the NDSF in Title V of P.L. 102-396 states: "That for purposes of this paragraph, this Act shall be treated as having been enacted after the National Defense Authorization Act for Fiscal Year 1993 (regardless of the actual dates of enactment)."

and other auxiliary support ships.[39] Consistent with Congressional views expressed in committee reports on the FY2001 Defense Authorization Bill,[40] the NDSF since FY2003 has been used to fund the construction of Navy auxiliaries such as TAKE-1 class dry cargo ships.[41]

Ships whose construction is funded through the NDSF are not subject to the full funding policy in the same way as are ships and other DOD procurement programs that are funded through the procurement title of the annual DOD appropriations act. In explaining the use of NDSF funding, DOD in 1995 stated:

> The National Defense Sealift Fund (NDSF) is not a procurement appropriation but a revolving fund. Dollars appropriated by Congress for the fund are not appropriated to purchase specific hulls as in the case of, for example the Navy's DDG-51 program. Rather, dollars made available to the NDSF are executed on an oldest money first basis. Therefore, full funding provisions as normally understood for ship acquisition do not apply.[42]

11th TAKE Class Ship

The FY2009 shipbuilding plan requests funding for the procurement of an 11th TAKE in FY2009, even though Congress provided the funding that was nominally requested for this ship in FY2008. The Navy, in other words, is in effect requesting Congress in FY2009 to fund much of the procurement cost of the 11th ship for a second time. The situation arises because the Navy is using much of the funding provided for the procurement of the 10th TAKE to pay for $280 million in cost growth on the first nine TAKEs, and much of the funding provided for the 11th TAKE to complete the funding for the 10th.[43] As mentioned above, the Navy can shift TAKE funding in this way because TAKEs are funded through the NDSF, which is not subject to the full funding policy in the same way as are ships and other DOD procurement programs that are funded through the procurement title of

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[39]Section 1014(b) of the FY2000 Defense Authorization Act (S. 1059/P.L. 106-65 of October 5, 1999; see pages 792-793 of H.Rept. 106-301 of August 6 (legislative day, August 5), 1999, the conference report on the act).

[40]See H.Rept. 106-616 of May 12, 2000, the House Armed Services Committee report on the FY2001 Defense Authorization Bill (H.R. 4205), page 89; S.Rept. 106-292 of May 12, 2000, the Senate Armed Services Committee report on the FY2001 Defense Authorization Bill (S. 2549), page 93. See also H.Rept. 106-945 of October 6, 2000, the conference report on the FY2001 Defense Authorization Act (H.R. 4205/P.L. 106-398 of October 30, 2000), page 35 (Sec. 127).

[41]For an earlier discussion of the issue of the changing composition of the SCN account, including the transfer to the NDSF of ships previously funded in the SCN account, see Statement of Ronald O'Rourke, Specialist in National Defense, Congressional Research Service, before the House Armed Services Committee Subcommittee on Military Procurement hearing on The Navy's Proposed Shipbuilding Program for FY2003, March 20, 2002, pp. CRS-20 to CRS-23.

[42]DOD information paper on strategic sealift acquisition program provided to CRS by U.S. Navy Office of Legislative Affairs, January 25, 1995, p. 1. For additional discussion, see the subsection entitled "DOD Sealift and Auxiliary Ships in NDSF" in the Background section of CRS Report RL41404, *Defense Procurement: Full Funding Policy — Background, Issues, and Options for Congress*, by Ronald O'Rourke. For a similar discussion, see the section entitled "DOD LMSR-Type Sealift Ships" in Appendix C to CRS Report RL32776, *Navy Ship Procurement: Alternative Funding Approaches — Background and Options for Congress*, by Ronald O'Rourke.

[43]Source: Navy briefing to CBO and CRS on Navy's proposed FY2009 budget, February 8, 2008.

the annual DOD appropriations act. If the TAKEs had instead been funded through the SCN account, the $280 million needed to pay for the cost growth on the first nine ships would have been requested in the "completion of prior-year shipbuilding" line item in the SCN account, which arguably would have made the $280 million in cost growth on the first nine TAKEs more visible in budget-justification documents. One potential oversight issue for the subcommittee is whether law or regulations pertaining to the use of funding for ships procured through the NDSF should be altered to make the financing of cost growth on ships funded in prior years more visible in budget-justification documents than is currently the case.

MPF LHA(R) Proposed For Funding In NDSF

The FY2009 shipbuilding plan proposes to procure a modified amphibious assault ship (LHA) in FY2010, with advance procurement funding in FY2009, through the NDSF. The ship would form part of the MPF(F) squadron and is thus sometimes referred to as a MPF(F) LHA. One potential oversight issue for the subcommittee is whether the ship should be funded through the NDSF or through the SCN account.

The Senate Armed Services Committee, in its report (S.Rept. 110-77 of June 5, 2007) on the FY2008 Defense Authorization Bill (S. 1547), stated that it "does not agree with funding development and procurement for amphibious assault ships within the NDSF. This ship type is specifically not included within the scope of sealift vessels eligible for NDSF, defined within section 2218 of title 10, United States Code."[44] 10 USC 2218(c)(1)(A) states that funds in the NDSF may be used for, among other things, "Construction (including design of vessels), purchase, alteration, and conversion of Department of Defense sealift vessels." 10 USC 2218(l)(2) states:

> The term "Department of Defense sealift vessel" means any ship owned, operated, controlled, or chartered by the Department of Defense that is any of the following:
> (A) A fast sealift ship, including any vessel in the Fast Sealift Program established under section 1424 of Public Law 101-510 (104 Stat. 1683).
> (B) A maritime prepositioning ship.
> (C) An afloat prepositioning ship.
> (D) An aviation maintenance support ship.
> (E) A hospital ship.
> (F) A strategic sealift ship.
> (G) A combat logistics force ship.
> (H) A maritime prepositioned ship.
> (I) Any other auxiliary support vessel.

Items A through E above were included in Section 1024 of the FY1993 Defense Authorization Act (H.R. 5006/P.L. 102-484 of October 23, 1992), the section that established the NDSF.[45] Items F through I were added by Section 1014(b) of the FY2000 Defense Authorization Act (S. 1059/P.L. 106-65 of October 5, 1999).

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[44]S.Rept, 110-77, p. 429.

[45]As mentioned earlier, Section 1024 was amended by Title V of the FY1993 Defense Appropriations Act (H.R. 5504/P.L. 102-396 of October 6, 1992), though not with respect to items A through E.

For observers who judge that an MPF(F) LHA falls within the above definition, a potential follow-on question is whether such a ship, due to its cost, capabilities, or anticipated uses, nevertheless should be funded in the SCN account rather than the NDSF.

JHSVs Proposed For Funding In SCN Account

The FY2009 shipbuilding plan proposes to procure five Joint High-Speed Vessels (JHSVs) for Navy use in FY2009-FY2013 in the SCN account. Some observers might view the JHSVs as sealift-type ships, which might suggest that they should be funded through the NDSF, like other sealift ships. The Navy states that it views JHSVs not as sealift or auxiliary ships, but as "an operational maneuver platform." The Navy stated:

> The Marine Corps and Army intend to use JHSV as an operational maneuver platform to deliver operationally ready units over intra-theater ranges to shallow draft, austere/degraded ports across the full range of military operations in a permissive environment. SOCOM will use JHSV for SOF operations as they have done in the past with leased HSVs.
>
> JHSV is a non-combatant vessel and is not designed to survive weapon effects. The platform will use non-developmental technology, modified to suit military applications.[46]

When asked why the Navy is budgeting for its JHSVs in the SCN account rather than the NDSF, the Navy states:

> Due to the Marine Corps, Army, and COCOM expected utilization of JHSV and until a crewing strategy is determined/confirmed, SCN funding is appropriate for JHSV.[47]

A potential oversight issue for the subcommittee is whether the JHSVs, in spite of being referred to by the Navy as operational maneuver platforms, are nevertheless sealift-type ships that would normally be funded through the NDSF.

Navy Capabilities Needed To Counter A Future Western Pacific Threat

The country that currently appears to have the most potential for posing a significant military challenge in coming years to U.S. naval and other military forces in the Western Pacific is China. A CRS report first published in November 2005 and updated numerous times since discusses China's naval modernization and its potential implications for required U.S. Navy capabilities.[48] The discussion below is adapted from parts of this report.

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[46]Source: Navy point paper dated February 26, 2008, on the JHSV, prepared in response to questions from CRS.

[47]Ibid.

[48]CRS Report RL33153, *China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress*, by Ronald O'Rourke.

Near-Term Goal of China's Naval Modernization

There is a consensus among observers that a near-term goal of China's military modernization is to develop military options for addressing the situation with Taiwan. Consistent with this goal, observers believe, China wants its modernized military to be capable of acting as a so-called anti-access force — a force that can deter U.S. intervention in a military crisis or conflict in the Taiwan Strait area, or failing that, delay the arrival or reduce the effectiveness of U.S. intervention forces, particularly U.S. naval and air forces.

If China's current naval modernization effort continues, China in coming years could field a layered anti-access force in the Western Pacific consisting of the following:

- an outermost layer that could include nuclear-powered attack submarines (SSNs), maritime bombers and reconnaissance aircraft, and anti-ship ballistic missiles (ASBMs) equipped with maneuvering reentry vehicles (MaRVs) capable of hitting moving ships at sea;
- a second layer closer in that could additionally include non-nuclear-powered attack submarines and shorter-ranged land-based fighters and strike aircraft; and
- a third layer further inward that could additionally include surface combatants, land-based surface-to-air missiles, and mines.

Such a layered maritime anti-access force could be viewed as broadly analogous to the sea-denial force that the Soviet Union developed during the Cold War to deny U.S. use of the sea or counter U.S. forces participating in a NATO-Warsaw Pact conflict. One potential difference between the Soviet sea-denial force and China's emerging maritime anti-access force is that China's force could include MaRV-equipped ASBMs capable of hitting moving ships at sea.

Broader or Longer-Term Goals of China's Naval Modernization

Some observers believe that, in addition to a near-term focus on developing military options for addressing the situation with Taiwan, broader or longer-term goals of China's military modernization effort, including its naval modernization effort, include the following:

- asserting China's regional military leadership, displacing U.S. regional military influence, prevailing in regional rivalries, and encouraging eventual U.S. military withdrawal from the region;
- defending China's claims in maritime territorial disputes, some of which have implications for oil, gas, or mineral exploration rights; and
- protecting China's sea lines of communication, which China relies upon increasingly for oil and other imports.

These broader or longer-term goals are significant for at least three reasons. First, they imply that if the situation with Taiwan is somehow resolved, China will find continuing reasons to pursue its modernization effort.

Second, they imply that if China completes its planned buildup of Taiwan-related naval force elements, or if the situation with Taiwan is somehow resolved, the composition of China's naval modernization effort could shift to include a greater emphasis on naval force elements that would be appropriate for supporting these broader or longer-term interests, such as aircraft carriers, a larger number of nuclear-powered attack submarines, serial production of destroyers (as opposed to China's recent production of destroyer designs in ones and twos), underway replenishment ships, and overseas bases or support facilities.

Third, these broader or longer-term goals suggest that even if China's military never fires a shot in anger at an opposing military, China's military forces, including in particular its naval forces, will still be used on a day-to-day basis to promote China's political position in the Pacific. This creates an essentially political (as opposed to combat-related) reason for the United States or other countries to maintain a competitive presence in the region with naval and other forces that are viewed by observers in the Pacific as capable of effectively countering China's forces.

Implications for Required U.S. Navy Capabilities

Potential implications of China's naval modernization for required U.S. Navy capabilities can be organized into three groups:

- capabilities for a crisis or conflict in the Taiwan Strait area;
- capabilities for maintaining U.S. Navy presence and military influence in the Western Pacific; and
- capabilities for detecting, tracking, and if necessary countering Chinese SSBNs equipped with long-range submarine-launched ballistic missiles (SLBMs).

For the U.S. Navy, a crisis or conflict in the Taiwan Strait could place a premium on the following:

- on-station or early-arriving forces;
- forces with a capability to defeat Chinese anti-access weapons and platforms; and
- forces with an ability to operate in an environment that could be characterized by information warfare and possibly electromagnetic pulse (EMP) or the use of nuclear weapons directly against Navy ships.

In the scenario of a short-duration conflict over Taiwan, on-station and early-arriving U.S. Navy forces could be of particular value, while later-arriving U.S. Navy forces might be of less value, at least in preventing initial success by Chinese forces. Given the difficulty of knowing with certainty when a Taiwan Strait crisis or conflict might occur, having forces on-station at the start of the crisis or conflict is a goal that would most reliably be met by maintaining a standing forward deployment of U.S. Navy forces in the area. Maintaining a standing forward deployment of U.S. Navy forces in the area while also maintaining U.S. Navy forward deployments in other regions, such as the Persian Gulf/Indian Ocean region and the Mediterranean Sea, would require a Navy with a certain minimum

number of ships. Having early-arriving U.S. Navy forces could mean having forces based in locations Western Pacific locations such as Japan, Guam, Singapore, or perhaps Hawaii, rather than on the U.S. West Coast.

Defeating Chinese maritime anti-access forces would require U.S. Navy forces with capabilities for countering:

- large numbers of theater-range ballistic missiles (TBMs), including MaRV-equipped ASBMs capable of hitting moving ships at sea;
- large numbers of land-attack cruise missiles (LACMs) and anti-ship cruise missiles (ASCMs), including some advanced ASCMs such as the SS-N-27 and SS-N-22;
- substantial numbers of land-based fighters, strike fighters, maritime bombers, and SAMs, including some built to modern designs;
- a substantial number of submarines, including a few that are nuclear-powered and a significant portion that are built to modern designs;
- a substantial number of destroyers, frigates, and fast attack craft, including some built to modern designs; and
- potentially large numbers of mines of different types, including some advanced models.

For the U.S. Navy, maintaining regional presence and military influence in the Western Pacific could place a premium on the following, among other things:

- maintaining a substantial U.S. Navy ship presence throughout the region;
- making frequent port calls in the region;
- conducting frequent exercises with other navies in the region;
- taking actions to ensure system compatibility between U.S. Navy ships and ships of allied and friendly nations in the region; and
- conducting frequent exchanges between U.S. Navy personnel and military and political leaders of other countries in the region.

Detecting, tracking, and if necessary countering Chinese SSBNs equipped with long-range SLBMs could require some or all of the following:

- a seabed-based sensor network analogous to the Sound Surveillance System (SOSUS) that the U.S. Navy used during the Cold War to detect and track Soviet nuclear-powered submarines;

- ocean surveillance ships with additional sonars, which would be similar to the TAGOS-type ocean-surveillance ships that the Navy also used during the Cold War to help detect and track Soviet nuclear-powered submarines; and

- enough SSNs so that some can be assigned to tracking and if necessary attacking Chinese SSBNs.

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.

Appendix A: Comparison of DDG-1000 and DDG-51 Capabilities

This appendix provides an unclassified comparison of capabilities of the DDG-1000 and DDG-51 designs. It is based on information provided to CRS on June 10, 2005 by officers from the Navy's N76 (Surface Warfare) and PMS 500 (DDG-1000 program) offices. Some of the information has been updated to reflect changes in the DDG-1000 design since 2005.

Introduction

The DDG-1000 and DDG-51 are both multimission destroyers, but they have somewhat different mission emphases. The DDG-1000 design features a stronger emphasis on land-attack operations and operations in littoral waters. The DDG-51 design is more oriented toward blue-water operations.

Consistent with its larger size, higher procurement cost, and greater use of new technologies, the Navy believes the DDG-1000 is more capable than the DDG-51 design in several respects. The Navy states that it designed the DDG-1000 for "full-spectrum littoral dominance" and believes the DDG-1000 would be considerably more capable than the DDG-51 in littoral operations. The Navy believes that due to its reduced signatures, defensive systems, number of gun shells in its magazine, and ability to resupply gun shells while underway, the DDG-1000 would have considerably more capability than the DDG-51 to enter defended littoral waters and conduct sustained operations there. The Navy believes that due to its guns, aviation capabilities, special operations forces (SOF) support capabilities, and small-boat capabilities, the DDG-1000 would be able to perform more littoral missions than the DDG-51. The Navy believes that due to its radars and C4I/networking capabilities, replacing a DDG-51 with a DDG-1000 in a carrier strike group would increase the strike group's anti-air warfare (AAW) capabilities by about 20%. The Navy believes that due to differences in their sonar capabilities, the DDG-51 has more blue-water anti-submarine warfare (ASW) capability than the DDG-1000.

Growth Margin

The DDG-51 and DDG-1000 designs each have about a 10% growth margin. For the roughly 9,000-ton DDG-51, this equates to about 900 tons of growth margin, while for the roughly 14,500-ton DDG-1000, this equates to about 1,450 tons of growth margin.

Ship Mobility

The two designs are roughly equivalent in terms of maximum sustained speed, cruising endurance, and seakeeping (i.e., stability in rough seas). The DDG-1000's draft (28 feet) is somewhat less than the DDG-51's (31 feet). Other things held equal, this might give the DDG-1000 an ability to operate in (or be berthed at) places where the water depth is sufficient for the DDG-1000 but not for the DDG-51. The DDG-1000's length (600 feet) is greater than the DDG-51's (505 feet). Other things held equal, this might give the DDG-51 an ability to be berthed in spaces that are long enough for the DDG-51 but not for the DDG-1000.

Electrical Power For Weapons and Systems

The DDG-51 has 8 megawatts (MW) of electrical power for its weapon systems, while the DDG-1000 design, with its integrated electric-drive system, can provide up to 78 MW for its weapons and power systems by diverting power from propulsion to weapons and systems.

Signatures and Detectability

The DDG-1000 has a smaller radar cross-section and lower infrared, acoustic, and magnetic signatures than the DDG-51. The two designs are roughly equivalent in terms of the detectability of their radar and other electromagnetic emissions.

Survivability And Damage Control

The Navy states that the DDG-1000 would be able to keep fighting after an attack like the one that disabled the USS Cole (DDG-67) on October 12, 2000.

The two designs are roughly equivalent in terms of degree of compartmentalization and ship stability when flooded. The DDG-1000's vertical launch system (VLS) is more heavily armored than the DDG-51's. The DDG's fire-suppression system is automated only in the engine room and magazine, while the DDG-1000's system is automated throughout the ship, making it safer and more effective. The DDG-51's flood-control system is not automated, while the DDG-1000's is, which the Navy believes will make it more effective. The DDG-1000's electrical power distribution system is an "integrated fight-through" system, meaning that it is designed to automatically isolate damaged areas and reroute electrical power around them. All critical DDG-1000 systems are dual-fed, meaning that if power from one source is cut off, it can be routed through a second source. The DDG-51's electrical power distribution system lacks these features.

C4I/Networking Bandwidth

The C4I and networking systems on the DDG-1000 would have five times as much bandwidth as those on the DDG-51. The C4I/networking capability of the DDG-1000 are equivalent to that on the LHD-8 amphibious assault ship. In addition to improved warfighting capability, this increased bandwidth would provide sailors aboard the DDG-1000 a better ability to "reach back" to information sources ashore when conducting at-sea maintenance of shipboard equipment, potentially increasing the availability rates of shipboard equipment.

Flag-Level Command Facilities

The DDG-1000 has facilities for embarking and supporting a flag-level officer and his staff, so that they could use the ship as platform for commanding a group of ships. The DDG-51 does not have such facilities.

Anti-Air Warfare/Ballistic Missile Defense (AAW/BMD)

The radars on the two ships are roughly equivalent in terms of dB gain (sensitivity) and target resolution. The firm track range of the DDG-1000's dual-band radar — the range at which it can

maintain firm tracks on targets — is 25% greater for most target types than the firm track range of the DDG-51's SPY-1 radar. The DDG-1000's AAW combat system would be able to maintain about 10 times as many tracks as the DDG-51's Aegis system. The DDG-1000's radar has much more capability for resisting enemy electronic countermeasures and for detecting targets amidst littoral "clutter." As a result of the better performance amidst littoral clutter, the Navy believes that ships escorted by the DDG-1000 in defended littoral waters would have three times as much survivability as ships escorted by the DDG-51.

The two designs would use the same types of area-defense and point-defense interceptor missiles. They would also use the same flares, chaff, and decoys to confuse enemy anti-ship cruise missiles, but the Navy believes these devices would be more effective on the DDG-1000 because of the DDG-1000's reduced signatures.

Anti-Surface Warfare/Strike Warfare

The DDG-1000 would have considerably more naval surface fire support (NSFS) capability than the DDG-51. The DDG-51 has one 5-inch gun, while the DDG-1000 has two 155mm Advanced Gun Systems (AGSs). The DDG-51's gun can fire an initial salvo of 20 rounds per minute and can subsequently fire at a sustained rate of four rounds per minute (20/4). The DDG-1000's two guns have a combined firing rate of 20/20. The shells currently fired by the DDG-51's gun have a range of 13 nm. Future shells are to have a range of up to 62 nm. The shells to be fired by the DDG-1000's guns are to have a range of up to 83 nm, and consequently could cover up to five times as much area as a shell with a range of 62 nm. The shells fired by the DDG-51 carry eight pounds of explosive, while those fired by the DDG-1000 are to carry 24 pounds of explosive. When fired at less than maximum range, the shells fired by the DDG-1000 can alter their flight paths so that six to eight of them can hit a target at the same time; the shells to be fired by the DDG-51 do not have this capability. The DDG-51 carries 600 of the 13nm-range shells or 230 of 62nm-range shells, while the DDG-1000 carries a total of 600 of its shells. It might be possible to fit the DDG-51 with one of the 155mm guns to be carried by the DDG-1000; it would likely require the removal of both the DDG-51's 5-inch gun and its forward (32-cell) VLS. In this configuration, the DDG-51 might carry about 120 of the gun's 155mm shells.

The 155mm guns on the DDG-1000 could be replaced in the future with an electromagnetic rail gun or directed-energy weapon. The DDG-51 does not have enough electrical power to support such weapons.

Antisubmarine Warfare (ASW)

The DDG-51's sonar system is more capable for blue-water ASW operations, while the DDG-1000's system is more capable for littoral ASW operations. The DDG-1000's bow-mounted sonar and towed array can interact to more rapidly triangulate targets. The Flight IIA DDG-51 lacks a towed array. The DDG-1000's radar would have more capability than the DDG-51's radar for detecting submarine periscopes.

The DDG-51 has six torpedo tubes for firing lightweight (12.75-inch diameter) anti-submarine torpedoes, while the DDG-1000 has none, but the Navy does not believe these tubes to be of significant operational value against potential future threats. Both ships can launch lightweight

torpedoes from their helicopters or fire the Vertical Launch Antisubmarine Rocket (VLA), which is armed with a lightweight torpedo.

The ships would use the same countermeasures for confusing enemy torpedoes, but the Navy believes these countermeasures would be more effective on the DDG-1000 due to the DDG-1000's reduced signatures.

Mine Warfare (MIW)

The DDG-1000's bow-mounted sonar includes an in-stride mine-avoidance capability; the DDG-51's sonar suite has less capability for detecting mines. The DDG-51 can be built to a design that permits the ship to embark and operate the Remote Minehunting System (RMS); six ships in the DDG-51 program (DDGs 91 to 96) have been built to this design. The Navy says that the DDG-1000's reduced acoustic and magnetic signatures would translate into a significantly greater operating area in mined waters.

Missiles For Performing Above Missions

The DDG-51 has 90 missile-launching tubes in its VLS, while the DDG-1000 has 80. The DDG-51's VLS tubes can accommodate a missile up to 21 inches in diameter, 21 feet in length, and about 3,000 pounds in weight. The DDG-1000's VLS tubes can accommodate a missile up to 24 inches in diameter, 22 feet in length, and about 4,000 pounds in weight. The gas-management (i.e., heat-management) system of the DDG-1000's VLS tubes can accommodate a hotter-burning missile than the gas-management system of the DDG-51's VLS, so the DDG-1000 might be more capable of using future missiles if they are hotter-burning.

Aviation For Performing Above Missions

The DDG-51 can embark and operate two SH-60 helicopters but does not have electronics for launching and recovering unmanned aerial vehicles (UAVs). The DDG-1000 can embark, operate, and provide full maintenance for two SH-60 helicopters or one SH-60 helicopter and three UAVs. The DDG-1000's flight deck is larger than the DDG-51's and can accommodate all joint rotary-wing aircraft, including the MV-22, the CH-53, and the H-47. The DDG-1000's flight deck is 10 feet higher off the water and can therefore be used for full flight operations in a sea state (i.e., sea condition) that is at least one step higher (i.e., rougher) than is possible for the flight deck on the DDG-51.

Special Operations Forces (SOF) Support

The DDG-1000 has additional berthing for 20 SOF personnel (i.e., a platoon), as well as a space for SOF mission planning and spaces for stowing SOF gear. The DDG-51 lacks these features.

Boats

The DDG-51 can embark two seven-meter boats that are deployed and recovered with a davit. The DDG-1000 can embark two 11-meter boats and four rubber raiding craft that are deployed and recovered with a stern ramp, which permits faster and safer launching and recovering, and launch/recovery operations in higher sea states.

Habitability Features For Crew

On the DDG-51, enlisted crew berthing spaces accommodate 20 to 60 sailors each. On the DDG-1000, every sailor would have a stateroom, and each stateroom would accommodate four sailors. The Navy believes these features would improve crew quality of life, which can improve retention rates.

CBO TESTIMONY

Statement of
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Current and Projected Navy Shipbuilding Programs

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

March 14, 2008

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

Mr. Chairman, Congressman Bartlett, and Members of the Subcommittee, I appreciate the opportunity to appear before you today to discuss the Navy's shipbuilding programs. The Congressional Budget Office's (CBO's) ongoing analysis of those programs, of the Navy's fiscal year 2009 shipbuilding plan, and of available information from the Navy about specific ship programs indicates the following:

- Executing the Navy's most recent 30-year shipbuilding plan will cost an average of about $25 billion a year (in 2009 dollars), or double the $12.6 billion a year the Navy has spent, on average, since 2003.[1]

- The Navy appears to have substantially revised its estimate of the cost of implementing the 30-year shipbuilding plan, bringing its overall estimate into general alignment with CBO's estimates of the past three years.

- CBO's estimates of the Navy's shipbuilding program through the 2009–2013 Future Years Defense Program (FYDP) are about 30 percent higher than the Navy's estimates. In particular, CBO estimates that the DDG-1000 guided-missile destroyer and the CG(X) future cruiser would probably cost significantly more than the Navy currently estimates.

- For the 2009–2020 period, which the Navy's plan describes as the "near term," CBO's estimates for new-ship construction alone are about 15 percent higher than the Navy's.

- The Navy's cost estimates for the 2009 shipbuilding plan beyond 2020, which the Navy's plan describes as the "far term," appear higher than CBO's by about 20 percent. CBO cannot explain the difference between its estimates and the Navy's because detailed information from the Navy explaining the basis of its cost estimates is not yet available.

Overview

In response to Congressional direction, the Department of the Navy began (with the submission of the fiscal year 2003 President's budget) issuing annual reports that describe its 30-year plans for ship construction. In the report released in February 2006, the Navy presented its fiscal year 2007 plan to expand its fleet from 285 battle force ships in 2006 to 313 by 2020 and beyond.[2] In May 2006, CBO issued a study analyzing that plan and estimating its potential costs.[3]

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1. Unless otherwise indicated, the cost figures in this testimony are in billions of 2009 dollars of budget authority, and years are in fiscal years.

2. Department of the Navy, *Report to Congress on Annual Long-Range Plan for Construction of Naval Vessels for FY 2007* (February 2006). Battle force ships are aircraft carriers, surface combatants, submarines, amphibious ships, and some logistics ships.

3. Congressional Budget Office, *Options for the Navy's Future Fleet* (May 2006).

Since May 2006, the Navy has provided two updates to its 313-ship plan, one for fiscal year 2008 and one for fiscal year 2009.[4] There are a number of differences among the plans. The 2007 and 2008 plans both assumed annual costs of $16.1 billion for new construction, but the 2008 plan increased the total number of ships purchased over a 30-year period to 293, compared with 280 for the 2007 plan. The increase of 13 in the number of ships purchased mainly reflected an acceleration of the building of DDG(X) destroyers, which are intended to replace today's Arleigh Burke class of guided-missile destroyers, and a shift in the time period under consideration (the Navy intended to buy more ships in 2037 than in 2007, so moving from a 2007–2036 planning window to a 2008–2037 window increases the number of vessels bought over 30 years). The 2009 plan envisions purchasing three more ships than the 2008 plan—296—and it appears to increase the Navy's estimate of the costs to implement the plan by about 50 percent (see Table 1).

Although the number of ships purchased under the 2008 and 2009 plans differs only slightly, the Navy made significant changes in the numbers of some of the types of ships it would purchase under the two plans. For example, problems and delays in completing the purchase of 55 littoral combat ships, or LCSs (which are small, fast surface combatants designed to focus on specific missions), resulted in a two-year postponement of the planned subsequent purchase of replacements for those ships; thus, fewer of those ships would be acquired by 2038. At the same time, the Navy increased the number of support ships it plans to buy over the next 30 years.

The Navy's 2009 Shipbuilding Plan

On February 6, 2008, the Secretary of the Navy submitted a report to the Congress on the Navy's fiscal year 2009 goals for ship construction over the next three decades. The report maintains the requirement for a fleet of 313 ships that was first outlined in the Navy's fiscal year 2007 report. That fleet is intended to comprise the following battle force ships:

- 11 aircraft carriers;
- 69 guided-missile destroyers;
- 19 guided-missile cruisers;
- 55 littoral combat ships;
- 48 attack submarines;

4. Department of the Navy, *Report to Congress on Annual Long-Range Plan for Construction of Naval Vessels for FY 2008* (February 2007); and Department of the Navy, *Report to Congress on Annual Long-Range Plan for Construction of Naval Vessels for FY 2009* (February 2008).

Table 1.

Comparison of 2007, 2008, and 2009 Navy Shipbuilding Plans

	2007 Plan (2007 to 2036)	2008 Plan (2008 to 2037)	2009 Plan (2009 to 2038)
	Ships Purchased		
Aircraft Carriers	7	7	7
Large Surface Combatants	53	66	69
Littoral Combat Ships	78	85	75
Attack Submarines	51	51	53
Ballistic Missile Submarines	14	14	12
Amphibious Ships	22	20	20
MPF(F) Ships	11	11	9
Support Ships	44	39	51
Total	**280**	**293**	**296**
	Total 30-Year New Construction Costs (Billions of 2009 Dollars)		
Navy's Estimate	483	483	720[a]
CBO's Estimate	624	648	697[a]
	Average Price Per Ship (Billions of 2009 Dollars)		
Navy's Estimate	1.7	1.6	2.4[b]
CBO's Estimate	2.2	2.2	2.4[b]

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

Note: MPF(F) = Maritime Prepositioning Force (Future).

a. The estimates include the costs of ballistic missile submarines (SSBNs). For the Navy's estimate, CBO used the cost target for SSBNs in the 2008 plan, updated to 2009 dollars.

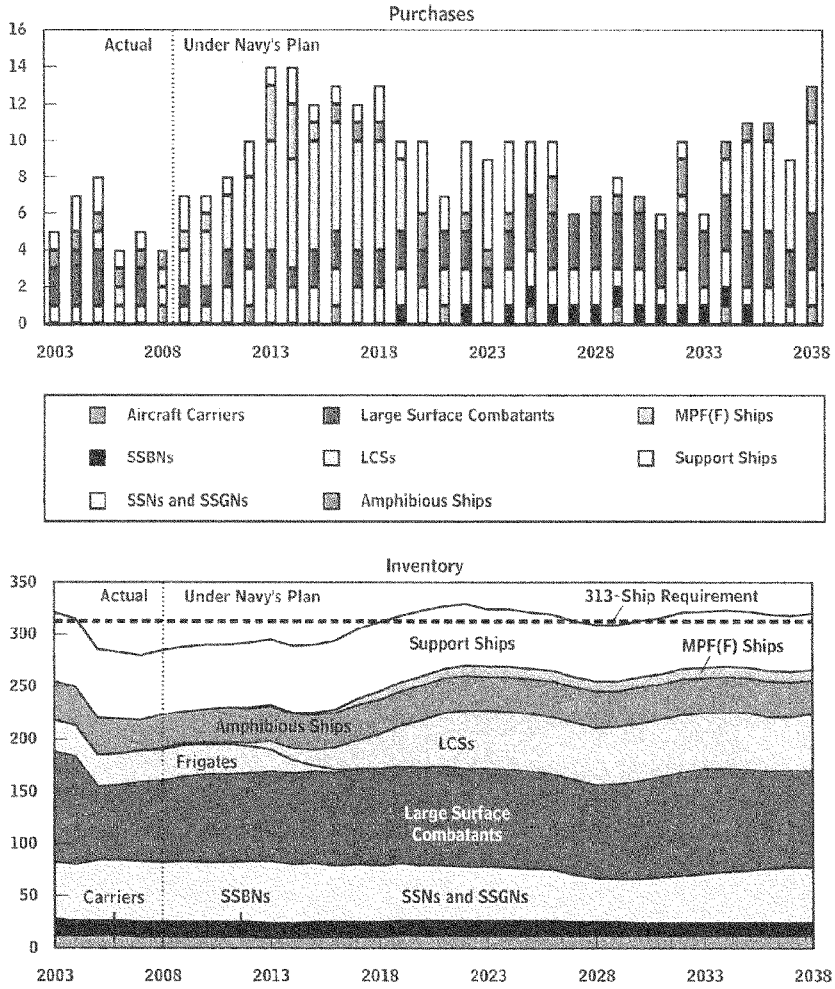
b. The Navy's estimate is $2.43 billion per ship. CBO's estimate is about 3 percent lower.

- 4 guided-missile submarines;
- 14 ballistic missile submarines;
- 31 amphibious ships;
- 12 future Maritime Prepositioning Force (Future), or MPF(F), ships, constituting one MPF(F) squadron; and
- 50 logistics and support ships.

Under the new plan, the Navy would purchase 7 ships in 2009 (see Figure 1) and a total of 47 ships between 2009 and 2013 (the period covered by the Department of Defense's 2009 FYDP). From 2014 to 2038, the Navy would buy another 249 vessels under its long-term plan—for a total of 296 ships, or an average of almost

Figure 1.

Annual Ship Purchases and Inventory Implied by the Navy's 2009 Shipbuilding Plan



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

Notes: SSBNs = ballistic missile submarines; SSNs = attack submarines; SSGNs = guided-missile submarines; LCSs = littoral combat ships; MPF(F) = Maritime Prepositioning Force (Future).

10 per year, over 30 years.[5] In the shorter term, the Navy would purchase an average of about 13 ships per year between 2013 and 2018 as production of the littoral combat ships is increased to six per year.

If implemented as described above, the Navy's 2009 plan would keep the fleet at or above the 313-ship goal beginning in 2019 and for most years thereafter. Between 2027 and 2030, the fleet would dip slightly below 313 ships. In contrast, the Navy's 2008 shipbuilding plan reached 313 or more ships in 2016. That difference between the 2008 plan and the 2009 plan reflects primarily the restructuring of the LCS program.

Notwithstanding its achievement of at least 313 ships in 2019, the Navy's 2009 plan would fall short of the service's stated goals for a number of the components of the fleet. The Navy would experience shortfalls in attack submarines (41 in 2028–2030 versus a stated requirement of 48), guided-missile submarines (none after 2028 versus a stated requirement of 4), ballistic missile submarines (12 after 2030 versus a stated requirement for 14), one LPD-17 amphibious transport dock, and two T-AKE logistics ships for the service's future MPF squadron. A shortfall of 15 guided-missile destroyers in meeting an inventory requirement of 88 in the 2007 shipbuilding plan was partially alleviated by increasing the construction rate of DDG(X)s to three per year in the 2008 plan, and the remainder was eliminated in the 2009 plan by assuming a 40-year service life for existing DDG-51s. I will discuss this and other service life issues associated with the Navy's 2009 plan in more detail subsequently.

The attack submarine shortfall in the 2009 plan would result from not buying enough ships at the right times to replace retiring Los Angeles class submarines. To offset the effect that not buying enough submarines would have on the Navy's ability to perform missions, the Navy hopes to reduce the construction time of the Virginia class so that the ships procured in the plan enter the fleet more quickly than is currently assumed, extend the service life of a few Los Angeles class submarines, and, if necessary, deploy a small number of submarines for seven months,

5. Those increased purchases of ships over the next 30 years are necessary to achieve a 313-ship fleet because during the past 16 years, the Navy purchased 99 ships, less than the number needed to sustain a 313-ship fleet. If the notional service life of ships in the fleet is 35 years, the Navy needs to purchase an average of 8.9 ships per year to sustain a 313-ship fleet. During the past 16 years, however, the Navy acquired ships at the rate of 6.2 ships per year.

   That rate of acquisition under the 2009 plan would be well below that experienced in the 1980s, but higher than the average annual purchases since then. During the period spanning 1981 to 1988—in an attempt to build a 600-ship fleet—the Navy purchased 167 ships at an average annual cost of $23 billion (or $1.1 billion per ship) and at a rate of almost 21 ships per year. From 1993 through 2000, the Navy purchased 54 ships at an average annual cost of about $10 billion (or $1.4 billion per ship) and at a rate of 6.8 ships per year. During the period spanning 2001 to 2008, the Navy's ship purchases will total 45—a rate of 5.8 ships annually—with an average annual cost of $12 billion (or $2.1 billion per ship)

one month longer than the traditional six-month deployment. The Navy has not yet determined which combination of those initiatives would best meet its goals.

Under the 2009 shipbuilding plan, the number of ballistic missile submarines (SSBNs) would fall below the stated requirement of 14 beginning in 2027. That shortfall stems from a procurement plan that provides for 12 replacements for the existing Ohio class SSBNs, rather than 14 in the 2007 and 2008 plans. Last year, the Chief of Naval Operations (CNO) stated that because SSBNs in the future will have life-of-the-ship reactors (rather than needing to be refueled at the midpoint of their service life), the submarines will spend less time in dry dock and more time at sea. Therefore, the Navy's requirement for those ships could drop to 12, because that number of ships would be capable of providing the same number of days at sea over their lifetimes as did 14 SSBNs that required refueling. The Navy's procurement plan indicates that the service has adopted the view expressed by the CNO, but the 2009 shipbuilding plan has not changed the stated requirement for 14 SSBNs. However, the Navy's cost estimates for the 2009 shipbuilding plan explicitly exclude the funding needed to replace the Ohio class SSBNs.

The 2009 shipbuilding plan also would not replace the Navy's four current guided-missile submarines (SSGNs). Those ships—former Ohio class ballistic missile submarines that were converted to a guided-missile configuration—are scheduled to be retired in the 2020s. The Navy notes the absence of planned replacements, stating: "Plans for the recapitalization of the OHIO Class submarines that have been converted to SSGN have been deferred until the ships are fully operational and their war fighting utility can be assessed. Should their replacement be required, it will be necessary to integrate their procurement with other ship and submarine recapitalization efforts planned for the post-FY2020 period."[6] That statement—as well as the Navy's retention of an official "requirement" for replacing the existing SSGNs—leaves open the possibility that future 30-year plans may incorporate replacements for those submarines.

Detailed Differences Among the Plans for Fiscal Years 2009, 2008, and 2007

The long-term shipbuilding plan that the Navy submitted to the Congress this year is similar in a number of respects to the fiscal year 2008 plan provided in February 2007.[7] The procurement schedules and quantities purchased for aircraft carriers, attack submarines, guided-missile destroyers, and guided-missile cruisers remain virtually unchanged between the two plans. For other categories of ships, however,

6. Department of the Navy, *Report to Congress on Annual Long-Range Plan for Construction of Naval Vessels for FY 2009*, p. 8.

7. For a detailed discussion of the differences between the 2007 and 2008 shipbuilding plans, see Congressional Budget Office, *Resource Implications of the Navy's Fiscal Year 2008 Shipbuilding Plan* (March 23, 2007), pp. 6–7.

the Navy's 2009 plan contains changes relative to its 2008 plan, and the cumulative changes between the 2007 and 2009 plans are greater. During the years common to all three plans (2007 to 2036), the total number of ships purchased does not vary by more than 10, but the numbers and types of ships purchased have changed significantly for every category of ship except for aircraft carriers, attack submarines, and amphibious ships (see Table 2).

- The 2009 plan maintains the increase in procurement quantity for the new guided-missile destroyer, the DDG(X), from two per year (as in the 2007 plan) to three per year (as in the 2008 plan) starting in the mid-2020s.

- The 2009 plan reduces procurement of the new ballistic missile submarine, the SSBN(X), from 14 to 12, causing the inventory of those ships to fall below the Navy's stated requirement permanently beyond 2026.

- The Navy's restructuring of the LCS ship program postpones completing the purchase of 55 of those ships until 2019 (compared with 2016 in the 2007 and 2008 plans). The 2007 and 2008 plans called for the purchase of 34 LCSs between 2007 and 2013, whereas under the 2009 plan, the Navy would purchase only 19. As a result, replacements for the LCS—which is assumed to have a service life of 25 years—would also be purchased later, reducing the number of ships bought in the early 2030s from 40 in the 2008 plan to 23 in the 2009 plan. Presumably, the Navy would eventually buy all 55 LCS replacements.

- Purchase of the ships for the MPF(F) squadron has been delayed by one to two years, compared with the 2007 and 2008 plans. According to the Navy, the delay gives it time to "resolve the concept of operations"—in other words, decide what missions the squadron would perform and under what circumstances.[8] The 2009 plan also reduces the number of MPF(F) T-AKE logistics ships from three to one, pending completion of a study of its concept of operations. The 2009 plan anticipates that those ships will still be needed: "It is expected that the assessment will show that the MPF(F) will need these two T-AKEs."[9]

- The 2009 plan restores the four large combat logistics ships that the 2008 plan had removed from the 2007 plan. Those ships are intended to replace four existing AOE-6 class logistics ships that are scheduled to be retired in the mid-2030s.

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8. Department of the Navy, *Report to Congress on Annual Long-Range Plan for Construction of Naval Vessels for FY 2009*, p. 7.

9. Ibid., p. 9.

Table 2.

Ship Purchases in the Years Common to All Three Navy Plans, 2007 to 2036

	2007 Shipbuilding Plan	2008 Shipbuilding Plan	2009 Shipbuilding Plan
		Ships Purchased	
Aircraft Carriers	7	7	7
Large Surface Combatants	53	65	65
Littoral Combat Ships	78	81	66
Attack Submarines	51	51	52
Ballistic Missile Submarines	14	14	12
Amphibious Ships	22	21	20
MPF(F) Ships	11	11	9
Support Ships	44	40	52
Total	**280**	**290**	**283**

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

Note: MPF(F) = Maritime Prepositioning Force (Future).

- The 2009 plan increases the number of Joint High Speed Vessels (JHSVs)—fast ferry support ships—that the Navy plans to purchase from three in the 2007 and 2008 plans to seven in the 2009 plan, exceeding the Navy's stated requirement of three. All seven ships count as battle force ships in the fleet inventory. Seven replacements for the JHSVs are also scheduled to be bought in the 2030s, when the first generation of those ships reaches the end of their service life.

- The 2009 plan increases the expected service life of many amphibious ships from 38 to 42 years or more and the service life of guided-missile destroyers from 35 to 40 years, in order to meet inventory requirements. I will discuss this issue in more detail subsequently.

Shipbuilding Costs Under the 2009–2013 FYDP

According to the budgetary information provided in the 2009 shipbuilding plan, the Navy estimates that the costs for constructing new ships, refueling its nuclear-powered vessels, purchasing mission modules for littoral combat ships, and modernizing its large surface combatants—what CBO defines as "total shipbuilding"—would average about $15.6 billion (in 2009 dollars) per year over the 2009–2013 Future Years Defense Program. Funding would be about $14 billion in 2009 and then climb to nearly $18 billion by 2013. That amount is 25 percent greater than the $13 billion that the Navy spent, on average, each year for shipbuilding between 2003 and 2008. According to the Navy's estimates, funding for new construction alone would average $13 billion per year between 2009 and 2013, compared with an annual average of somewhat more than $11 billion between 2003 and 2008.

CBO's estimates for the costs of the Navy's proposed shipbuilding program indicate that the funding needed during the period spanned by the 2009 FYDP could be higher, however. Annual costs within the FYDP for total shipbuilding would average about $21 billion, CBO estimates, which is about 30 percent more than the costs in the Navy's plan and about 60 percent more than the amounts the Navy has spent on shipbuilding recently. CBO estimates that the annual costs for new construction alone could average $18 billion through 2013, or about 35 percent more than in the Navy's plan.

For the 2009–2020 period (which the Navy's plan describes as the near term), CBO estimates that the average annual new shipbuilding costs (excluding ballistic missile submarines) would be more than $20 billion per year. That estimate is about 15 percent greater than the Navy's estimate of $17 billion per year. Including the costs of ballistic missile submarines—if estimates were available from the Navy—could increase that gap.

The largest differences between the Navy's estimates and CBO's estimates within the period of the FYDP are for the costs of the DDG-1000 Zumwalt class destroyer and the CG(X) future cruiser. The Navy plans to buy five DDG-1000s and two CG(X)s between 2009 and 2013. (The first two DDG-1000s were purchased in 2007.) The service estimates the cost of those seven ships at a total of $16.4 billion, whereas CBO's estimate is $28.7 billion.[10]

If CBO's cost estimates for the DDG-1000 and the CG(X) are realized, it would be difficult for the Navy to build a 313-ship fleet without substantially increasing the service's shipbuilding budgets during the years spanned by the 2009 FYDP and beyond. (Those costs are discussed in more detail next.) The difference between CBO's and the Navy's estimates for the cost of the DDG-1000 represents more than 12 percent of the Navy's total shipbuilding budget between 2009 and 2013, or about $10 billion. In the absence of additional resources, paying that difference could require canceling the purchases of either 20 littoral combat ships or most of the MPF(F) ships over the 2009–2013 period.

CBO estimates that the DDG-1000s will cost about 60 percent more than the Navy projects, and CBO's estimate for the costs of the CG(X) is higher than the Navy's because of the relationship between the DDG-1000 and the CG(X) programs. (See pages 18 through 21 for a more detailed discussion of CBO's estimates for those ships.) Currently, funding for the CG(X) in the 2009 FYDP is based on using the DDG-1000 hull to construct the CG(X), while incorporating within that hull more sophisticated radars and combat systems than those carried by the DDG-1000. Thus, higher costs for the DDG-1000 would mean higher costs for the two CG(X)s in the FYDP and for the 17 additional CG(X)s the Navy plans to purchase between

10. See the statement of J. Michael Gilmore, Assistant Director for National Security, Congressional Budget Office, *The Navy's DD(X) Destroyer Program*, before the Subcommittee on Projection Forces of the House Armed Services Committee (July 19, 2005).

2014 and 2023. If CBO's estimate for the cost of the CG(X) is realized, the Navy may find it difficult to purchase two CG(X)s a year between 2015 and 2021, as contained in the 2009 shipbuilding plan. If the service is able to afford only one CG(X) per year, then seven CG(X)s would be either canceled or delayed until the mid- to late 2020s. A delay in CG(X) purchases (rather than a cancellation) could mean that other ship purchases contained in the 2009 plan during the period beyond 2020 might have to be canceled or delayed.

Changes in the Navy's Planned Long-Term Funding for Ship Construction

In submitting last year's shipbuilding plan, the Navy stated that it needed $16.1 billion in funding for new-ship construction ($13.4 billion in 2005 dollars) annually for the period spanning 2008 to 2037. Over the past six years, the Navy has received funding averaging $11.1 billion (in 2009 dollars) for new-ship construction. In building its 2008 plan, the Navy assumed its total obligational authority—the Navy's budgetary topline—would not increase annually at more than the rate of inflation. To accommodate a larger budgetary share for ship construction within a topline receiving no real growth, the Navy made four key assumptions:

- That funding for operation and maintenance in the service's accounts would not grow faster than the overall rate of inflation;
- That funding for research and development—which hit a historical high of about $20 billion in 2006—would fall by $5 billion or $6 billion (although the Navy did not specify over what time frame that would happen) and not increase for the duration of the 30-year plan;
- That any increase in pay and benefits for Navy personnel beyond the general rate of inflation would be offset by reductions in the number of personnel (the Navy's end strength); and
- That ongoing ship programs would experience no cost growth and that the costs of prospective new ships would meet strict cost targets.

The cost targets for ships to be bought after 2013 in the Navy's 2008 shipbuilding plan generally were not based on the costs of either existing ships or cost estimates for notional designs. To develop those targets, the Navy used a "top-down" approach. It allocated the total amount of money it would devote to new-ship construction over 30 years among different types of ships—surface combatants, amphibious ships, attack submarines, ballistic missile submarines, and aircraft carriers—according to their historical shares of Navy funding. The historical share of funding for a particular category of ship was then divided by the number of ships the Navy wanted to buy in that category to calculate the cost target for each category of future ship.

The Navy's 2009 budget illustrates the challenges that the Navy faces in realizing the assumptions listed above. For fiscal year 2009, the Navy is requesting a topline increase of 5 percent in real (inflation-adjusted) terms. The Navy is also requesting an increase of 3 percent in real terms for operation and maintenance spending, 3 percent for military personnel spending, and 11 percent for research and development spending. At the same time, shipbuilding would decrease by 2 percent in real terms. Thus, the 2009 budget request differs from every budgetary assumption the Navy made in constructing its previous shipbuilding plans.

In addition, it appears that the Navy has changed its cost target methodology in developing its 2009 shipbuilding plan. The 2009 plan states that the Navy needs to devote $17.1 billion annually to constructing new ships through 2020 ($15.8 billion in 2007 dollars); the corresponding average annual funding through 2020 in the Navy's 2008 plan was about $16.1 billion ($14.4 billion in 2007 dollars), although the 2009 plan excludes costs for ballistic missile submarines and the 2008 plan includes those costs. The Navy attributes the increase in annual costs between the 2008 and 2009 plans during this near-term period to "the FY 2006 Pension Protection Act, rising material costs, increasing labor rates, and the cost risk associated with developing and building new ship classes. Additionally, minimal first-tier shipbuilding capacity is devoted to commercial business, placing the overhead burden largely on Navy shipbuilding programs."[11]

In the far term, according to Figure 1 in the Navy's 2009 shipbuilding plan, the Navy expects that it will need an average of $25.1 billion ($23.2 billion in 2007 dollars) per year between 2021 and 2038 to fund new construction. (The 2008 shipbuilding plan displayed average annual new-construction costs of about $15 billion for the period spanning 2021–2037.) The 2009 plan lacks any explanation of how the Navy derived the higher costs the plan displays or why those costs differ substantially from the cost targets presented in the 2007 and 2008 shipbuilding plans.

Overall, the Navy's 2009 plan suggests that the Navy will need an average of $22.4 billion ($20.7 billion in 2007 dollars) annually during the next 30 years to pay for new-ship construction alone; but those costs exclude paying for other items included historically in the total shipbuilding budget. For example, they exclude funding for nuclear refuelings of aircraft carriers and submarines, mission modules for littoral combat ships, and modernization programs for existing surface combatants. Notably, the 2009 plan also excludes funding to replace the Navy's ballistic missile submarines, which were included in the cost projections the Navy provided in its 2007 and 2008 shipbuilding plans. The 2009 plan states: "The replacement program for the OHIO class Ballistic Missile submarines is a strategic issue that merits immediate attention. Absent additional resources to recapitalize

11. Department of the Navy, *Report to Congress on Annual Long-Range Plan for Construction of Naval Vessels for FY 2009*, p. 11.

this national strategic capability, the Navy will be unable to concurrently replace the existing OHIO class submarines and the balance of its force structure requirements in accordance with this shipbuilding plan."[12] Including the Navy's estimates for new-ship construction and for the costs of 12 SSBNs (from its 2008 plan), as well as CBO's estimate for the other items listed immediately above, the Navy's total shipbuilding budget could average about $25.9 billion per year for the next 30 years, an increase of around 40 percent over the comparable estimates in the 2007 and 2008 plans and more than double the average for total shipbuilding contained in the budgets of the past six years.

CBO's Estimate of the Costs of the 2009 Shipbuilding Plan

Buying a total of 296 ships over the 2009–2038 period—or an average of about 10 ships per year—would require an average annual shipbuilding budget of $23.2 billion for new construction alone, including the costs for new ballistic missile submarines, CBO estimates (see Table 3). (If SSBNs were excluded, the Navy would need to spend an average of $20.4 billion annually on new-ship construction.) That amount is less than the $24.0 billion in new construction (including SSBNs) that the Navy expects its shipbuilding plan to cost and more than double the $11.1 billion per year that the Navy spent on new-ship construction between 2003 and 2008. Including the costs of refueling nuclear-powered aircraft carriers and submarines would raise CBO's estimate to $24.4 billion a year, on average, over the next 30 years (see Figure 2).

Those figures exclude costs to modernize existing cruisers and destroyers and to buy the mission modules that are intended to provide much of the combat capability of littoral combat ships. The Navy plans to fund those items from accounts other than the ones normally associated with ship construction. However, such modernization programs have been funded from shipbuilding accounts in the past; and in other new-ship programs (such as for the DDG-1000 Zumwalt class destroyer), combat capability is included in a ship's cost and funded as part of the ship's construction. Paying all of the expenses of new-ship construction (including constructing new ballistic missile submarines to replace the Ohio class SSBNs), nuclear refuelings, modernization of surface combatants, and mission modules for LCSs would require average funding of $25.2 billion annually, CBO estimates.

Although CBO's estimates for the 2009 plan are higher than the Navy's through 2020, the Navy's estimates for the years beyond 2020 appear higher than CBO's. Funding for new-ship construction beyond 2020 would average $20.9 billion a year (excluding SSBNs), CBO estimates, or about $4 billion per year less than the amounts that the Navy shows in its display projecting new-ship construction costs during the 2021–2038 period. CBO hopes to receive information from the Navy

12. Ibid., p. 8.

Tabl 3.

Average Annual Shipbuilding Costs

(Billions of 2009 dollars)

	New-Ship Construction (Excluding SSBNs)	New-Ship Construction (Including SSBNs)	New-Ship Construction, SSBNs, and Nuclear Refuelings	New-Ship Construction, SSBNs, Nuclear Refuelings, LCS Mission Modules, and Surface Combatant Modernization
Navy's Actual Spending, 2003 to 2008	11.1	11.1	12.4	12.6
Costs Under the Navy's 2009 Long-Term Shipbuilding Plan				
Navy's estimate	22.4	24.0 [a]	25.1 [b]	25.9 [b]
CBO's estimate	20.4	23.2	24.4	25.2
Memorandum:				
Navy's Estimate of Costs Under the 2007 and 2008 Plans	n.a.	16.1	17.2 [b]	18.0 [b]

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

Note: SSBN = ballistic missile submarine; LCS = littoral combat ship; n.a. = not applicable.

a. The Navy's estimate for new-ship construction plus the Navy's cost target for SSBNs under the 2007 and 2008 shipbuilding plans.

b. The Navy's estimate for new-ship construction and cost target for SSBNs plus CBO's estimate for the additional costs.

providing the details underlying its cost estimates for ship programs over the 30-year period.

According to CBO's calculations, the Navy's 2009 shipbuilding plan would cost about $2.5 billion more per year to carry out than the 2008 plan. Some of that increase is attributable to price escalation of about 3.5 percent from 2008 dollars to 2009 dollars. The remainder of the increase is attributable to higher ship prices (such as for the LCS), changes in the numbers and types of ships being purchased, and a change in how CBO incorporates higher inflation in the shipbuilding industry into its projection, which is discussed in more detail in the next section.

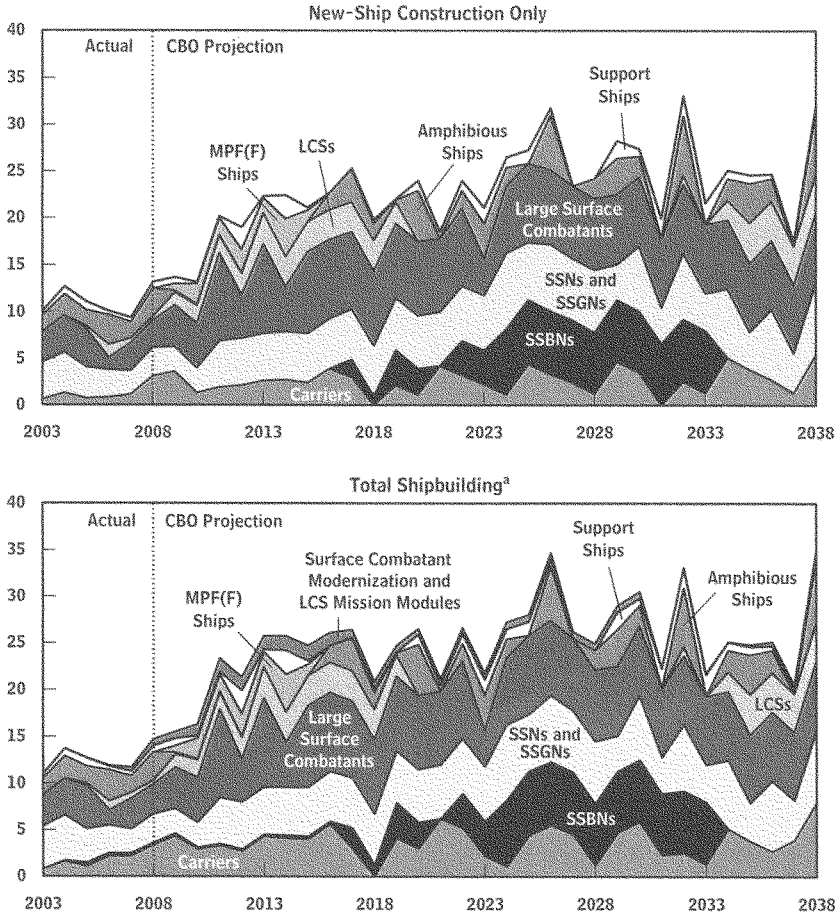
Inflation in Shipbuilding

An important component of the Navy's and CBO's cost analyses is the role of inflation in the construction of naval vessels. The Navy has examined the inflationary component of past cost increases in shipbuilding programs and concluded that the overall figure ("inflator") that the Department of Defense (DoD) uses to project cost increases for its procurement programs has underestimated the

Figure 2.

Annual Costs Implied by the Navy's 2009 Shipbuilding Plan

(Billions of 2009 dollars)



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

Notes: SSBNs = ballistic missile submarines; SSNs = attack submarines; SSGNs = guided-missile submarines; LCSs = littoral combat ships; MPF(F) = Maritime Prepositioning Force (Future).

Amounts for 2006 exclude supplemental funding related to Hurricane Katrina.

a. Includes costs for new-ship construction, refuelings of nuclear-powered ships, programs to modernize existing large surface combatants, and mission modules for littoral combat ships. The modernization of surface combatants and the mission modules for LCSs are expected to be funded from Navy accounts other than those traditionally associated with shipbuilding.

inflation that has actually occurred in the naval shipbuilding industry over the past decade by about 1.8 percentage points per year, on average. The Navy provided CBO with a composite inflator that reflects the growth in labor and material costs that the industry has experienced in the past and that the Navy expects it to experience through at least 2013. That inflator is an average of about 1.4 percentage points higher per year—from 2009 through at least 2016—than the price increases DoD expects for its procurement programs overall: about 3.5 percent for shipbuilding versus 2.1 percent for defense procurement programs as a whole. The Navy incorporated that higher rate of inflation in its budget request for 2009 and the associated Future Years Defense Program. In both the Navy's and CBO's analyses, the higher rate of inflation produces real growth in the future costs of ships. For example, a ship that costs $2.5 billion to build in 2009 will cost $3.2 billion (in 2009 dollars) to build in 2025.

In its analysis of the Navy's 2007 and 2008 shipbuilding plans, CBO assumed that cost growth in the shipbuilding industry would continue to be higher than average for many years and then would gradually revert to the level of general inflation for DoD procurement programs by 2025. In its analysis of the 2009 plan, CBO assumed that the higher rate for ships would continue throughout the analysis, in part because CBO does not have an analytic basis for determining when and how the difference between the shipbuilding inflator and the DoD procurement inflator would disappear.

At the same time, it should be noted that inflation in shipbuilding costs cannot forever continue to grow at a rate faster than that of procurement programs overall (or the economy as a whole). If that were to happen, eventually the price of ships would outstrip the Navy's ability to pay for them, even in very small numbers. In addition, for the purposes of comparison, if in this analysis CBO had used the same assumption as in its previous analysis—that higher shipbuilding inflation reverts to the level of DoD procurement programs by 2025—then the total costs for shipbuilding would be $24.1 billion per year and new construction alone would total an average of $22.2 billion per year, or about 5 percent less than CBO's current estimates, in 2009 dollars.

Individual Ship Programs

To estimate the costs of the 2009 shipbuilding plan, CBO used Navy data on actual costs for ships now under construction and historical relationships between the cost and weight of ships (as discussed in more detail below). To apply those relationships to ships for which the Navy has yet to develop even a notional design—such as the prospective replacements for Arleigh Burke class destroyers and the Ohio class ballistic missile submarines—CBO had to make assumptions about the sizes and capabilities of future ships.

Aircraft Carriers

Under the 2009 shipbuilding plan, the Navy's requirement is for 11 aircraft carriers, which is unchanged from the 2007 and 2008 plans. To maintain that size force, the Navy would buy seven CVN-78 Gerald R. Ford class aircraft carriers over the 2009–2038 period. Building them every four or five years, the Navy would maintain at least 11 carriers through 2038, with the exception of 2013 and 2014, when the force would drop to 10. That decline occurs because under the shipbuilding plan, the CVN-65, the *Enterprise*, will be retired at the end of its service life in 2013 and the CVN-78 Gerald R. Ford class nuclear-powered aircraft carrier that will replace it will not be commissioned until 2015. In the event of construction delays in the CVN-78 program, the period during which the Navy would have 10 carriers would be longer.

To estimate the cost of the new CVN-78 class aircraft carriers, CBO relied on the Navy's estimate for the CVN-78 and increased the cost to account for historical cost risk in procurement programs and for the higher rate of inflation expected in the shipbuilding industry.[13] (A comparison to the cost of the CVN-77 Nimitz class carrier adjusted for historical cost growth would have produced a similar estimate.) The first ship of the new CVN-78 class would require substantial funding for nonrecurring detail design, but subsequent ships would need little such funding. CBO estimates that the seven carriers in the Navy's 2009 shipbuilding plan would have an average cost of about $11.2 billion each (see Table 4). Under the 2007 and 2008 plans, the Navy's cost target for aircraft carriers was $10.5 billion. CBO does not have enough information to calculate what the Navy estimates the average cost of its new class of aircraft carriers would be under the 2009 plan.[14]

The Navy has estimated the cost for the first CVN-78 carrier, but CBO believes that the Navy's cost estimate is optimistic, for several reasons. First, in its budget submission to the Congress, the Navy indicates that the first CVN-78 will cost about $10.3 billion in 2009 dollars, including about $2.4 billion in nonrecurring engineering and design costs. The Navy asserts that the construction time and cost of the first CVN-78 will be less than those of its predecessor ship, the CVN-77, *George H. W. Bush*. In contrast, CBO estimates that the CVN-78 will cost about $11.2 billion, allowing for the historical cost growth that has affected shipbuilding programs at the CVN-78's stage of construction over the past 30 years. If, however, the CVN-78 experiences cost growth similar to that of other lead ships that the Navy has purchased in the past 10 years, costs could be much higher still.[15]

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13. Cost risk is the tendency of defense procurement programs to experience cost increases unrelated to inflation.

14. CBO's estimate of the costs of aircraft carriers in the Navy's 2008 shipbuilding plan was almost identical to the Navy's cost target. CBO's higher estimate under the 2009 plan is the result of assuming that higher inflation in the shipbuilding industry will continue through 2038.

15. The LPD-17, the SSN-774, the SSN-775, and the LCS-1 have experienced cost increases of about 80 percent, 11 percent, 25 percent, and 100 percent, respectively.

Table 4.

Comparison of the Navy's Cost Targets and Cost Estimates, and of CBO's Estimates of the Costs of Major New Ships

(Billions of 2009 dollars)

	Navy's Average per-Ship Cost Target Under Its 2007 and 2008 Plans[a]	Average per-Ship Cost over the 2009-2038 Period	
		Navy's Cost Estimate Under Its 2009 Plan	CBO's Estimate[b]
CVN-78 Gerald R. Ford Class Aircraft Carriers	10.5	n.a.	11.2
DDG-1000 Zumwalt Class Destroyers	2.4[c]	2.5[c]	4.0[c]
CG(X) Cruisers	3.0	n.a.	4.2
DDG(X) Destroyers (Replacement for Arleigh Burke class)	1.7[d]	n.a.	2.6
Virginia Class Attack Submarines	2.4	2.4	2.9
SSBN(X) Ballistic Missile Submarines (Replacement for Ohio class)	3.4	n.a.	7.0
Amphibious Ships	1.6	n.a.	2.8

Source: Congressional Budget Office.

Note: n.a. = not available in the Navy's 2009 plan.

a. Based on a briefing by the Navy for CBO and the Congressional Research Service, February 10, 2006, updated for current-year dollars.

b. CBO's estimates are generally based on historical relationships between cost and weight for individual types of ships; they also incorporate the higher inflation that the naval shipbuilding industry has experienced (compared with inflation in other Department of Defense procurement programs).

c. Average per-ship costs for the total program.

d. The Navy's 2008 plan added 12 DDG(X)s and removed 4 large logistics ships compared with the 2007 plan, but the 2008 plan indicated that overall shipbuilding costs would not change. CBO assumed that the Navy's per-ship cost target for the DDG(X) was therefore reduced from $2.1 billion to $1.7 billion, reflecting both the increased number of ships to be purchased and the increase in funding that could be allocated to purchasing those new destroyers from the reduction in purchases of logistics ships.

Second, Navy officials have told CBO that the confidence level of their estimate for the lead CVN-78 is below 50 percent, implying a more than 50 percent chance that the costs for the ship will be higher than the Navy's estimate (and a less than 50 percent chance that they will be lower). Finally, a number of critical technologies to be incorporated in the CVN-78 (such as the new electromagnetic catapult system for launching aircraft) remain under development. Difficulties in completing their development could arise and increase costs.

Surface Combatants

The Navy's and CBO's estimates for the costs of the DDG-1000 program and the first two CG(X)s differ substantially. All of the DDG-1000s and most of the CG(X)s will be purchased by 2021, which partly explains why CBO's estimates for new-ship construction are higher than the Navy's through 2020. The Navy's purchase of 55 littoral combat ships would be completed before 2020. Starting in 2022, the Navy would begin purchasing replacements for the DDG-51 class destroyer, designated in the plan as DDG(X).

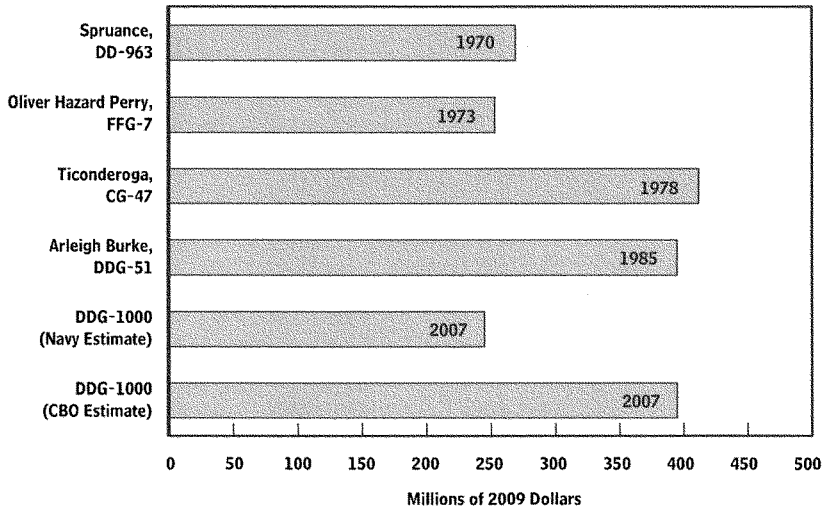
DDG-1000 Guided-Missile Destroyer. The Navy plans to buy one DDG-1000 Zumwalt class destroyer each year from 2009 to 2013, in addition to the two authorized in 2007. The service's 2009 budget suggests that the Navy expects the first two ships to cost $3.2 billion each and the following five to cost an average of $2.2 billion each, which is a cost increase of about $200 million per ship for the last five ships compared with the cost in the Navy's 2008 budget. CBO, by contrast, estimates that the first two DDG-1000s would cost $5.0 billion apiece, and the next five would cost an average of $3.6 billion each.

The Navy's estimate for the two lead-ship DDG-1000s prices the ship at about $250 million (in 2009 dollars) per thousand tons of lightship displacement, which is the weight of the ship minus its crew, fuel, ammunition, and stores. In comparison, the lead ship of the DDG-51 class destroyer cost about $390 million per thousand tons, and the lead ship of the Ticonderoga class cruiser cost more than $400 million per thousand tons (see Figure 3). CBO uses the DDG-51 lead-ship cost as its basis for estimating the cost of the lead ship of the DDG-1000 class, adjusting for the size of the ship.

The Navy has asserted that the basis for CBO's estimate may not be valid because the DDG-51 had a number of problems in the early stages of its construction that should not be expected to occur during the construction of the first DDG-1000s. In particular, the design of the lead DDG-51 was disrupted and delayed because a new design tool being used at the time was incomplete and not well understood. It had to be abandoned and the design restarted using more traditional methods. The design of the lead DDG-51 was thus about 20 percent complete when construction began. In comparison, according to the Navy, the design of the DDG-1000 is progressing far more smoothly; the Navy expects to have the design 85 percent complete when construction begins this summer. In addition, the DDG-51 is a smaller,

Figure 3.

Cost per Thousand Tons for the Lead Ship of Various Classes of Surface Combatants



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

Notes: The years shown here indicate the year in which each lead ship was authorized.

Costs are per thousand tons of lightship displacement (the weight of the ship itself without its crew, materiel, weapons, or fuel).

more densely built ship and, therefore, the Navy believes that on a ton-for-ton basis, it has been more difficult to build than the DDG-1000 class is going to be.

Although the Navy may not encounter the same problems constructing the lead DDG-1000s as the service did in constructing the lead DDG-51, it is CBO's view that the Navy is likely to encounter other problems that will increase the costs of the DDG-1000 and delay its construction. As Navy officials have stated, lead ships are often very difficult to build and typically have many problems in construction. The problems with the first littoral combat ships (for which costs doubled) and the lead ship of the LPD-17 class amphibious transport dock (for which costs increased by 80 percent and construction time more than doubled) illustrate the difficulties the Navy has encountered recently in constructing lead ships.[16] Both the LCS and the LPD-17 are much less complex technologically than the DDG-

16. Problems with the LCS included a change in construction standards, other design changes, and mistakes made by the contractor. The LPD-17 has suffered from an incomplete design before construction began, difficult integration of new technologies on the ship, and higher labor and material costs.

1000 will be. And Navy officials have stated that the Virginia class submarine program was about at the same point in its design as the DDG-1000 will be when construction of those new submarines began. Nevertheless, the cost of the first two ships of the Virginia class exceeded their budget by an average of 17 percent. Moreover, the DDG-1000 program is incorporating 10 major new technologies into the lead ship of the class compared with the technologies used in the previous-generation DDG-51 destroyer. Those technologies include electric drive and a distributed power system, a tumblehome hull (one in which the sides of the ship slope outward to increase stealthiness), an advanced gun system, new radars, and composite materials and stealthy coatings for the deckhouse. In the past, the Navy typically introduced three or four major new technologies into a new class of surface combatant.

Comparing the Navy's estimate for two additional DDG-51s and the Navy's estimate for the seventh DDG-1000 to be purchased in 2013 illustrates the risk for cost growth in the latter program. Last year, the Navy stated that if the Congress authorized and bought two new DDG-51s in 2008—ships that would have the benefit of substantial efficiencies and lessons learned because of the 62 ships that were built previously—the cost would have been between $3.1 billion and $3.2 billion, or about $1.6 billion apiece in 2009 dollars. At the same time, in its fiscal year 2009 budget submission to the Congress, the Navy stated that the cost to build the seventh DDG-1000 in 2013 will be about $2.4 billion in 2013 dollars. Deflating the cost of the seventh DDG-1000, using the inflation index provided to CBO by the Navy for shipbuilding, brings the Navy's estimate for that ship to about $1.9 billion in 2009 dollars. The lightship displacement of the DDG-1000 is about 5,000 tons (or more than 50 percent) greater than the lightship displacement of the DDG-51s under construction today. In effect, the Navy's estimates imply that those 5,000 extra tons, as well as the 10 new technologies being incorporated into the DDG-1000 class, will add only 15 percent, or about $300 million, to the ship's cost.

CG(X) Future Cruiser. The Navy intends to begin buying a new missile defense surface combatant, the CG(X) cruiser, in 2011. CBO's estimates for the first two ships of the class are about double the Navy's estimates. CBO assumed that a CG(X) would use the same hull as a DDG-1000. The Navy's budget estimates for the 2011 and 2013 cruisers are based on the same assumption; the Navy expects those ships to cost $2.8 billion and $2.5 billion, respectively. The Navy last year conducted an Analysis of Alternatives (AoA) to determine what capabilities the CG(X) will have. Results of that analysis have not yet been released, but a version of the CG(X) built using the DDG-1000 hull is only one of the options considered in the AoA. The Navy says it is studying other options that would be larger and more capable than a CG(X) built using the DDG-1000 hull, including ships using nuclear propulsion (see Box 1). The Navy does not appear to be considering a ship smaller than the DDG-1000 as the basis for the CG(X). Any design for the CG(X) larger than the DDG-1000 is likely to be substantially more expensive than the

Box 1.

A Nuclear-Powered Cruiser

The 2008 National Defense Authorization Act directed that future Navy aircraft carriers, submarines, and cruisers should be nuclear-powered. Building a future nuclear cruiser, a CGN(X), would probably cost more than what the Congressional Budget Office (or the Navy) has currently estimated for the CG(X). A Navy report on the cost-effectiveness of nuclear propulsion estimates that the additional cost to install nuclear propulsion in a conventionally powered surface combatant would be approximately $700 million. If a CGN(X) has to be much larger than the DDG-1000, then there would probably be additional costs. Press reports have indicated that a CGN(X) could displace as much as 23,000 to 25,000 tons, or 60 percent to 70 percent more than the DDG-1000. (A large ship may be necessary, for example, if the Navy were to use for the CGN(X) one of the reactors now used in the CVN-78 class of aircraft carrier because, according to the Navy, that reactor's size, weight, and supporting systems could not be accommodated within a hull the size of the DDG-1000.) If that is the case, the larger, nuclear-powered CGN(X) could cost much more than the DDG-1000.

DDG-1000. Using the DDG-51 as an analogy, CBO estimates that the lead CG(X)s will cost $5.2 billion. The average cost for the class would be about $4.2 billion apiece, assuming that the CG(X) is conventionally powered and uses the DDG-1000 hull. CBO also assumed, consistent with the DDG-1000 program, that two shipyards would build the CG(X)s.

Moreover, CBO's estimate for the cost of the CG(X) may be optimistic. The last time the Navy reused a hull design for a new class of surface combatants was in the 1970s, when the service built the Spruance class destroyers and Ticonderoga class cruisers. Both ship classes shared the same hull but were designed for different missions. The Spruances were general-purpose destroyers used to escort other Navy ships in the event of war and were designed in particular for antisubmarine warfare. The Ticonderoga class cruisers incorporated the Aegis antiair combat system, the SPY-1 radar, and surface-to-air missiles to counter the threat to Navy carrier battle groups posed by Soviet naval aviation. Reflecting its more complex combat systems, the cost per thousand tons of the lead Ticonderoga was more than 60 percent higher than the cost of the lead Spruance, notwithstanding their many common hull and mechanical systems.

DDG(X) Future Guided-Missile Destroyer. The Navy's 313-ship plan would also maintain a fleet of 62 DDG-51s. CBO assumed that those ships would be modernized and would serve for about 40 years, consistent with the Navy's plan, which calls for the purchase of the first replacement—a DDG(X)—in 2022. For its analysis, CBO assumed that the new DDG(X) would be somewhat larger than the DDG-51 (which displaces about 9,200 tons at full load) but smaller than the DDG-1000 (which is intended to displace about 14,500 tons at full load). Specifically, CBO assumed that the DDG(X) would have a full-load displacement of about 11,000 tons and could not carry both of the advanced gun systems of the DDG-1000. In CBO's projection, those replacement destroyers would have an average cost of about $2.6 billion apiece if they were bought at a rate of three per year—the same cost per thousand tons as today's Arleigh Burke destroyers.[17] The Navy's implicit cost target for DDG replacements in its 2008 plan was much lower: $1.7 billion each.[18] In the 2009 shipbuilding plan, the Navy did not indicate what it estimates DDG(X)s would cost.

Modernizing DDG-51 Destroyers. The 40-year service life assumed for the DDG-51 Arleigh Burke class destroyers in the Navy's 2009 shipbuilding plan is a significant change from the 35-year service life assumed in the 2007 and 2008 shipbuilding plans. Historical evidence suggests that the Navy may be optimistic to assume that those destroyers can serve effectively for 40 years. The average retirement age of the last 18 classes of cruisers, destroyers, and frigates was below 35 years, and many were retired at 25 years or less (see Table 5). When the DDG-51 class was first built, the service life for which it was designed was 30 years.

Generally, the Navy has considered surface combatants to have become obsolete when their installed combat systems were deemed no longer effective to counter the threats they would face in the event of war. The hull and mechanical systems of the ships have usually had service life remaining in them, though additional resources would have been required to maintain them in good working order. Currently, the Navy plans a modernization program that focuses mostly on the DDG-51's hull and mechanical systems at an average cost per ship of about $100 million. On the basis of historical experience, it is possible that the combat systems of the DDG-51s may have to be upgraded twice in order for those ships to serve in the fleet for 40 years. The costs for upgrading those combat systems are not included in the Navy's shipbuilding plan. In comparison, the Navy plans to spend more than $200 million per ship on modernizing the remaining CG-47

17. Buying more of a given ship in the same year reduces the cost per ship because it allows a shipyard's fixed overhead expenses to be spread among more ships.

18. The cost target for DDG(X)s in the Navy's 2007 plan was $2.1 billion. However, the Navy added 12 DDG(X)s to the 2008 plan and removed four logistics ships, while stating that the overall costs of the plan were unchanged. CBO therefore assumed that the resulting cost target for the DDG(X) was reduced from $2.1 billion to $1.7 billion, reflecting both the increased number of ships to be purchased and the increase in funding that could be allocated to purchasing those new destroyers from the reduction in purchases of logistics ships.

Tabl 5.

Average Retirement Age of Surface Combatant Classes

Ship Class	Average Retirement Age (Years)	Reason(s)
CG-47 (Non-VLS)	20	Budgetary; not as capable as other ships
CG-26	28	Budgetary
CG-16	30	Budgetary
CGN-38	17	Budgetary
CGN-36	24	Budgetary
CGN-35	27	Budgetary
CGN-9	32	Budgetary
DD-963 (VLS)	25	Budgetary; not as capable as other ships
DD-963	25	Budgetary; not as capable as other ships
DD-931	29	End of service life
DDG-993 (Non-VLS)	17	Budgetary; not as capable as other ships
DDG-37	30	End of service life
DDG-2	26	End of service life
FF-1052	17	End of service life; limited capability
FF-1040	22	End of service life; limited capability
FF-1037	25	End of service life; limited capability
FFG-7	18	Budgetary; end of service life
FFG-1	21	End of service life

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

Notes: The reasons cited for retirement are the Navy's descriptions.

CG = guided-missile cruiser; VLS = vertical launch system; CGN = nuclear-powered guided-missile cruiser; DD = destroyer; DDG = guided-missile destroyer; FF = frigate; FFG = guided-missile frigate.

Ticonderoga class cruisers, including their combat systems, so that those ships can serve effectively for at least 35 years. CBO's projections assume one round of DDG-51 modernizations. CBO estimates the per-ship cost of such modernizations, including the combat systems, would be at least comparable to that of the CG-47 program, or more than $200 million apiece.

Littoral Combat Ship. The Navy's 2009 shipbuilding plan envisions building 55 littoral combat ships between 2005 and 2019. Because those ships are assumed to have a service life of 25 years, the Navy would need to begin procuring their replacements in 2032. The LCS differs from the Navy's existing and previous warships in that the program is divided into two components: the sea frame and mission modules. The sea frame (the ship itself) will be built with the ability to switch mission modules (combat systems) depending on which mission the ship is intended to carry out at a given time. Currently, the Navy expects to use three types of mission modules: for countermine warfare, antisubmarine warfare, and anti-surface-craft warfare. The Navy expects to buy 64 mission modules for the 55-ship program.

The Navy intends for the LCS to be a relatively affordable ship that will be relatively simple to design and build. Each sea frame was originally expected to cost about $260 million in 2009 dollars (or $220 million in 2005 dollars). The Navy's 2009 budget provides for the purchase of 18 LCSs during the 2009–2013 period at an average cost of about $450 million per sea frame, or 11 fewer than the 2008 plan envisioned for the same time period. In the summer of 2007, the Navy requested that the cost cap for the fifth and sixth LCSs be raised to $460 million. Based on the effects of a higher production rate and learning in the construction process from the first to subsequent ships, that figure suggested that the total construction cost of the first ships would be around $600 million each. In the 2009 budget, the Navy estimates the cost of LCS-1 at $631 million and LCS-2 at $636 million.

Historical experience indicates that cost growth in the LCS program was likely. In particular, historical cost-to-weight relationships using the lead ship of the FFG-7 Oliver Hazard Perry class frigate as an analogy indicate that the Navy's original cost target for the LCS of $260 million in 2009 dollars (or $220 million in 2005 dollars) was optimistic. The first FFG-7 cost about $670 million in 2009 dollars to build, or about $250 million per thousand tons, including its combat systems. Applying that metric to the LCS program suggests the lead ships would cost about $600 million apiece, including the cost of one mission module. Thus, in this case, the use of an historical cost-to-weight relationship produces an estimate that is less than the actual costs of the first LCSs to date but substantially greater than the Navy's original estimate.

Based on the actual costs the Navy is incurring for the LCS program, CBO estimates that the first two LCSs could cost about $700 million each, including outfitting and postdelivery and various nonrecurring costs associated with first ships of a class, but excluding mission modules. That estimate is consistent with the estimate CBO provided to this Subcommittee last summer. However, as of December 2007, LCS-1 was 79 percent complete and LCS-2 was 65 percent complete. Thus, additional cost growth is possible, and CBO's estimate reflects that cost risk.

Overall, CBO estimates that the LCSs in the Navy's plan would cost about $550 million each, on average, excluding mission modules. That estimate assumes that the Navy selects one of the two existing designs and makes no changes. As the program advances with a settled design and higher annual rates of production, average ship costs would probably decline, CBO estimates. If the Navy decides to make changes to that design in building future ships, however, the costs of those ships could be higher than what CBO estimates now.

The relatively simple design of the LCSs and the substantial cost increases that have occurred in the program suggest that the Navy may also have trouble meeting its cost targets for the larger, much more complex surface combatants in its shipbuilding plan, such as the DDG-1000 and the CG(X).

Submarines

The attack submarine force continues to be a major source of demand on the Navy's resources. Under the 2009 shipbuilding plan, the Navy would buy two attack submarines a year beginning in 2011. Under the Navy's 2007 and 2008 plans, it would begin buying two submarines a year in 2012. That procurement rate would continue through 2028 and then alternate between one and two submarines a year. The Navy's plan does not envision continuing to use guided-missile submarines beyond the 2020s, when the existing Ohio class SSGNs are to be retired from service.

Senior Navy leaders have stated—and the 2009 shipbuilding plan assumes—that the cost of Virginia class submarines would have to be reduced by about 15 percent, to around $2.4 billion each, before the Navy would be able to buy two per year.[19] The President's 2009 budget indicates a cost of about $2.9 billion for the Virginia class submarine purchased in fiscal year 2009.

CBO estimates that the Virginia class attack submarines built during the 2009–2038 period would have an average cost of $2.9 billion apiece. That cost is based on several factors—the prices that the Navy is currently paying for Virginia class submarines, the effects of producing two submarines per year starting in 2012, and the real cost growth affecting naval shipbuilding. In addition, CBO assumes that the average unit cost of the improved Virginia class to be built beginning in 2024 would be about 30 percent more than that of the original Virginia class, largely because of historical cost growth in the shipbuilding industry continuing through 2038.

In addition to the attack submarine force, the 2009 plan calls for a force of 14 ballistic missile submarines through 2026, with the force falling to 12 SSBNs by 2030. Although its stated requirement is for 14 SSBNs, the Navy's 2009 plan includes only 12 SSBNs, two less than the 2007 and 2008 plans. The Navy intends to buy its first replacement SSBN in 2019 and purchase one per year starting in 2024. The design, cost, and capabilities of that replacement submarine are among the most significant uncertainties in the Navy's and CBO's analyses. The Navy's 2007 and 2008 plans assumed that the first ship of a new class of ballistic missile submarines—an SSBN(X)—would cost $4.3 billion and that subsequent ships would cost about $3.3 billion each. The average cost for 14 SSBN(X)s would be about $3.4 billion. In contrast, the 2009 plan explicitly excludes the SSBN replacement as part of its costs, although it includes 12 of those submarines in its projection of future ship inventories.

Some senior Navy officials who oversee submarine programs have stated that the most cost-effective strategy for designing a new ballistic missile submarine would be to rely heavily on the design of the Virginia class. Much of the bow and stern of

19. The Navy's position is that to purchase two submarines per year in 2012, their cost would have to fall to $2.0 billion each in 2005 dollars, which is about $2.4 billion in 2009 dollars.

a Virginia class submarine, as well as the nuclear reactor, could be incorporated into the new SSBN. New missile-compartment sections would have to be developed, however, and integrated into the submarine's design. The practicality of that option has not yet been explored, and the Navy is only beginning to think about how to design an SSBN(X). No notional design or definitive estimate for the displacement of the SSBN(X) yet exists. Many Navy and industry officials involved with submarine warfare or submarine construction expect that the new ballistic missile submarine would be substantially smaller than the existing Ohio class submarines.

In its projections, CBO assumed that the Navy would buy 12 SSBN(X)s and that those submarines would be smaller than Ohio class submarines. CBO assumed that the SSBN(X) would be designed to carry 16 missile tubes (instead of 24 on existing submarines) and would displace around 15,000 tons submerged—making it roughly twice the size of a Virginia class submarine but nearly 4,000 tons smaller than an Ohio class submarine. On the basis of the larger size, what the Navy is currently paying for a Virginia class submarine, and cost growth in shipbuilding programs, CBO estimated that the average cost of the SSBN(X) would be about $7.0 billion. (A smaller design with only 12 or 8 missile tubes could cost $800 million or $1.5 billion less, respectively.) Therefore, CBO's projections include $84 billion that are excluded from the costs displayed in the Navy's 2009 shipbuilding plan (which excludes the costs of replacement SSBNs).

Amphibious Ships

The Navy's 313-ship requirement in its 2009 shipbuilding plan calls for a force of 31 amphibious ships organized around nine expeditionary strike groups. Each group would include one large amphibious assault ship (LHA or LHD class), one amphibious transport dock (LPD), and one dock landing ship (LSD). A footnote in the 2009 plan states, however, that the Marine Corps requires 33 amphibious ships in order to transport the assault echelons of two Marine expeditionary brigades and, therefore, the Navy is reviewing options to increase the number of amphibious ships to 33. To meet the Marine Corps's requirement for 33 ships over the 30-year period, the 2009 plan does not substantially increase the purchase of amphibious ships compared with the 2007 and 2008 plans, but it does assume an increase in the service life of two LPD-4s, two LHAs, and all 12 LSDs compared with the previous plans.

Specifically, the 2009 plan calls for the purchase of an LHA-6 in 2017 (in addition to the one being bought in 2007 and versions that would be purchased in 2010 and 2013 to be used in the Maritime Prepositioning Force (Future) squadron). The Navy would also buy seven replacements for the Wasp class LHDs in the 2020s and 2030s—designated the LH(X). In addition, 12 replacements for today's LSD-41 and LSD-49 class ships—designated the LSD(X)—which will start to reach the end of their service lives in the 2020s, would be purchased starting in 2016, at a rate of one every other year. The start of this program is two years earlier than in

the 2008 plan, but the 2009 plan slows LSD(X) procurement such that the last four ships of the class are purchased later than in the 2008 plan. The Navy's cost target for an amphibious ship in the 2007 and 2008 plans was $1.6 billion. That target was an average of the costs of the large LHAs and LHDs (which displace around 40,000 to 45,000 tons) and the smaller LSD replacements (which would probably displace 20,000 to 25,000 tons). The Navy has not provided comparable cost targets or other estimates for amphibious ships under the 2009 plan.

CBO assumes that all future amphibious assault ships will not be substantially larger than the first LHA-6, which is a variant of the existing LHD design. According to the Navy, its 2009 plan assumes that future large-deck amphibious ships will look a lot like the first LHA-6, which it is purchasing this year at a cost of about $3.4 billion. Under that assumption, CBO estimates the average cost of an amphibious ship—that is, the average cost for the LHA-6s, LHD replacements, and LSD(X)s—will be $2.8 billion.

The Navy's experience with its LPD-17 San Antonio class amphibious ship serves as a useful illustration of the rising costs of ships from one generation to the next on a per-ton basis. It also illustrates the difficulty in reducing those costs to levels that might meet the Navy's targets. The lead ship of the LPD-17 class is the most expensive amphibious ship on a per-ton basis ever built, at about $130 million per thousand tons. Thus, adopting either the LSD-41 or LHD-1 amphibious ships as analogies, historical cost-to-weight relationships would have understated substantially the actual costs of the LPD-17 (see Figure 4). Costs of subsequent ships of the LPD-17 class range from $1.5 billion to a little less than $1.7 billion, which are substantially higher than the Navy's original estimates.

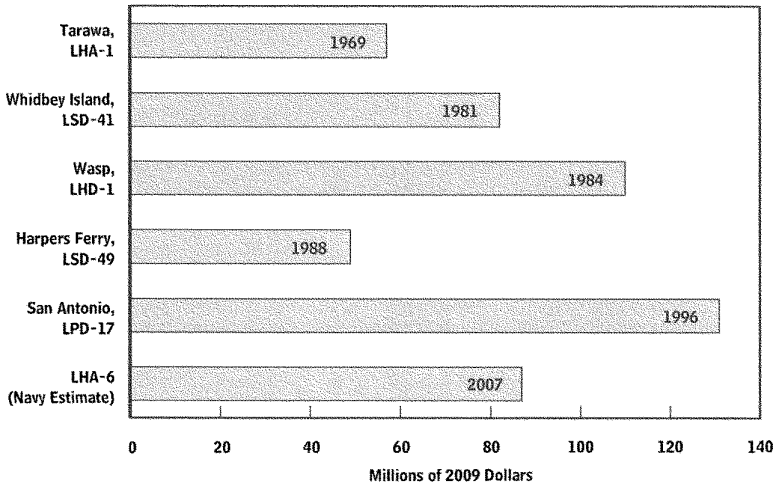
The Navy's 2009 plan states that in order to meet the Marine Corps's requirement for 33 amphibious ships, four ships would undergo a program to extend their service life. The costs of those extensions are not indicated in the 2009 plan, however. Likewise, CBO did not include the costs of those extensions in its estimates because little information is available about them at this time. Two Austin class LPD-4s will serve for 45 and 47 years, respectively, and two LHA-1 class amphibious assault ships will serve for 43 years. In addition, the decommissioning schedule associated with the Navy's 2009 shipbuilding plan indicates that the LSD-41 and LSD-49 class ships, which retire in the 2020s, will serve an average of 42 years, up from an average of 38 years in the 2007 and 2008 plans. Those ships may eventually require service life extension programs as well in order to serve more than 40 years in the fleet.

Maritime Prepositioning Ships

In a June 2005 report to the Congress, the Navy outlined the future of the Maritime Prepositioning Force. It described an MPF(F) squadron of 12 ships, most of which would be based on designs of existing amphibious or support ships. The squadron would include two LHA-6s; an LHD; three modified large, medium-speed roll-on/

Figur 4.

Cost per Thousand Tons for the Lead Ship of Various Classes of Amphibious Ships



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

Notes: The years shown here indicate the year in which each lead ship was authorized.

Costs are per thousand tons of lightship displacement (the weight of the ship itself without its crew, materiel, weapons, or fuel).

The LSD-49 is a variant of the LSD-41, and the LHA-6 is a variant of the LHD-8, the last ship of the LHD-1 class. The principal differences between the LHA-6 and the LHD-8 are that the LHA-6 will not have a docking well but will have enhanced aviation capabilities.

roll-off ships; three modified-design T-AKE support ships; three mobile landing platforms (large flow-on/flow-off ships to carry the squadron's landing craft); and two ships from existing maritime prepositioning squadrons. However, under the 2008 shipbuilding plan, the Navy opted in favor of using the existing T-AKE for the MPF(F) squadron, rather than a modified design. In the 2009 shipbuilding plan, the Navy has removed two of the three T-AKEs previously associated with the MPF(F) squadron but indicates that those two ships may be restored in its future shipbuilding plans. Consequently, the MPF(F) inventory under the 2009 plan is short two ships after 2020, when the squadron is expected to be ready for deployment. Further, as was noted earlier, the construction of most of the other MPF(F) ships was delayed in the 2009 plan by one to two years until the Navy and Marine Corps resolve issues regarding the concept of operations for the squadron. CBO estimates the cost of the MPF(F) squadron with only one T-AKE at about $14 billion.

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