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Navy LX(R) Amphibious Ship Program: Background and Issues for Congress

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August 1, 2014

Congressional Research Service

7-5700

www.crs.gov

R43543

Summary

The LX(R) program is a program to build a new class of 11 amphibious ships for the Navy. The Navy wants to procure the first LX(R) in FY2020, and is currently examining design concepts for the ship.

The primary function of Navy amphibious ships is to lift (i.e., transport) U.S. Marines and their equipment and supplies to distant operating areas, and enable Marines to conduct expeditionary operations ashore in those areas. Although amphibious ships are designed to support Marine landings against opposing military forces, they are also used for operations in permissive or benign situations where there are no opposing forces.

The Navy wants to procure 11 LX(R)s as replacements for 12 aging Whidbey Island/Harpers Ferry (LSD-41/49) class amphibious ships, the first of which will reach age 40 in 2025. The Navy wants to procure the first four LX(R)s in FY2020, FY2022, FY2024, and FY2026, and the remaining seven ships at a rate of one per year during the period FY2028-FY2034. If this procurement schedule were implemented, the Navy projects that the first two ships would enter service in FY2026 and the 11th would enter service in 2038.

The LX(R) program has received a total of \$23.6 million in research and development funding through FY2014. The Navy's FY2015 budget submission requests \$36.9 million in additional research and development funding for the program.

Issues for Congress include whether to approve, reject, or modify the Navy's request for FY2015 research and development funding for the LX(R) program; whether to provide the Navy with guidance concerning the cost, capability, or acquisition strategy for the program; and whether to provide funding in FY2015 for the procurement of an additional San Antonio (LPD-17) class amphibious ship, in part as an industrial base bridge from the LPD-17 program to the start of the LX(R) program.

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Introduction

This report provides background information and issues for Congress on the LX(R) amphibious ship program, a Navy program to build a new class of 11 amphibious ships. The Navy wants to procure the first LX(R) in FY2020, and is currently examining design concepts for the ship. Issues for Congress include whether to approve, reject, or modify the Navy's request for FY2015 research and development funding for the LX(R) program; whether to provide the Navy with guidance concerning the cost, capability, or acquisition strategy for the program; and whether to provide funding in FY2015 for the procurement of an additional San Antonio (LPD-17) class amphibious ship, in part as an industrial base bridge from the LPD-17 program to the start of the LX(R) program. Decisions Congress makes on the LX(R) program will affect Navy capabilities and funding requirements, and the U.S. shipbuilding industrial base.

Background

Amphibious Ships in General

Roles and Missions of Amphibious Ships

The primary function of Navy amphibious ships is to lift (i.e., transport) U.S. Marines and their equipment and supplies to distant operating areas, and enable Marines to conduct expeditionary operations ashore in those areas. Although amphibious ships are designed to support Marine landings against opposing military forces, they are also used for operations in permissive or benign situations where there are no opposing forces. Due to their large storage spaces and their ability to use helicopters and landing craft to transfer people, equipment, and supplies from ship to shore without need for port facilities,¹ amphibious ships are potentially useful for a range of combat and non-combat operations.²

¹ Amphibious ships have berthing spaces for Marines; storage space for their wheeled vehicles, their other combat equipment, and their supplies; flight decks and hangar decks for their helicopters and vertical take-off and landing (VTOL) fixed-wing aircraft; and well decks for storing and launching their landing craft. (A well deck is a large, garage-like space in the stern of the ship. It can be flooded with water so that landing craft can leave or return to the ship. Access to the well deck is protected by a large stern gate that is somewhat like a garage door.)

² Amphibious ships and their embarked Marine forces can be used for launching and conducting humanitarian-assistance and disaster-response (HA/DR) operations; peacetime engagement and partnership-building activities, such as exercises; other nation-building operations, such as reconstruction operations; operations to train, advise, and assist foreign military forces; peace-enforcement operations; non-combatant evacuation operations (NEOs); maritime-security operations, such as anti-piracy operations; smaller-scale strike and counter-terrorism operations; and larger-scale ground combat operations. Amphibious ships and their embarked Marine forces can also be used for maintaining forward-deployed naval presence for purposes of deterrence, reassurance, and maintaining regional stability.

Although the Marines have not conducted a large-scale amphibious assault against opposing military forces since the Korean conflict, Marine Corps officials stated in 2008 that about 85 U.S. amphibious operations of other kinds were conducted between 1990 and April 2008. (Source: Marine Corps briefing to CRS on April 25, 2008.) In addition, presenting the potential for conducting an amphibious landing can generate tactical benefits, even if the landing is not carried out. During the 1991 Persian Gulf conflict, for example, the potential for conducting an amphibious landing by a force of about 17,000 Marines embarked on amphibious ships in the Persian Gulf tied down several Iraqi divisions in coastal-defense positions. Those Iraqi divisions' positions were not available for use against U.S.-coalition ground (continued...)

On any given day, some of the Navy's amphibious ships, like some of the Navy's other ships, are forward-deployed to various overseas operating areas. Forward-deployed U.S. Navy amphibious ships are often organized into three-ship formations called amphibious ready groups (ARGs).³ On average, two or perhaps three ARGs might be forward-deployed at any given time. Amphibious ships are also sometimes forward-deployed on an individual basis to lower-threat operating areas, particularly for conducting peacetime engagement activities with foreign countries or for responding to smaller-scale contingencies.

Types of Amphibious Ships

Navy amphibious ships can be divided into two main groups—the so-called “big-deck” amphibious assault ships, designated LHA and LHD, which look like medium-sized aircraft carriers, and the smaller (but still sizeable) amphibious ships designated LPD or LSD, which are sometimes called “small-deck” amphibious ships.

U.S. Navy amphibious ships have designations starting with the letter L, as in amphibious *landing*. LHA can be translated as landing ship, helicopter-capable, assault; LHD can be translated as landing ship, helicopter-capable, well deck; LPD can be translated as landing ship, helicopter platform, well deck; and LSD can be translated as landing ship, well deck. Whether noted in the designation or not, almost all these ships have well decks.⁴ In the designation LX(R), the X means that the exact design of the ship has not yet been determined, and the R means it is intended as a replacement for existing ships.

The LHAs and LHDs have large flight decks and hangar decks for embarking and operating numerous helicopters and vertical or short takeoff and landing (V/STOL) fixed-wing aircraft, while the LSDs and LPDs have much smaller flight decks and hangar decks for embarking and operating smaller numbers of helicopters. The LHAs and LHDs, as bigger ships, in general can individually embark more Marines and equipment than the LSDs and LPDs.

Amphibious Lift Goal

The Navy's 306-ship force structure goal calls for achieving and maintaining a 33-ship amphibious force that includes 11 LHA/LHA-type amphibious assault ships, 11 San Antonio (LPD-17) class amphibious ships, and 11 LSD-type amphibious ships (11+11+11). Navy and Marine Corps officials have agreed that this force would minimally meet the Marine Corps' goal of having an amphibious ship force with enough combined capacity to lift the assault echelons (AEs) of 2.0 Marine Expeditionary Brigades (MEBs). A 33-ship force would include 15

(...continued)

forces moving north from Saudi Arabia. (See CRS Report 91-421, *Persian Gulf War: Defense Policy Implications for Congress*, coordinated by Ronald O'Rourke, p. 41. [May 15, 1991; out of print and available directly from the report coordinator.]

³ An ARG notionally includes three amphibious ships—one LHA or LHD, one LSD, and one LPD. These three amphibious ships together can embark a Marine expeditionary unit (MEU) consisting of about 2,200 Marines, their aircraft, their landing craft, their combat equipment, and about 15 days' worth of supplies. ARGs can operate in conjunction with carrier strike groups (CSGs) to form larger naval task forces; ARGs can also be broken up into individual ships that are sent to separate operating areas.

⁴ The exceptions are LHAs 6 and 7, which do not have well decks and instead have expanded aviation support capabilities. For an explanation of well decks, see footnote 1.

amphibious ships for each MEB, plus 3 additional ships to account for roughly 10% of the amphibious ship force being in overhaul at any given time.

Marine Corps and Navy officials also agree that a 38-ship amphibious force would more fully meet the Marine Corps' 2.0 MEB AE amphibious lift requirement. Such a force would include 17 amphibious ships for each MEB, plus 4 additional ships to account for ships in overhaul. Although a 38-ship force would more fully meet the Marine Corps' lift requirement, the Navy and Marine Corps have agreed to accept the operational risks associated with having a 33-ship force rather than a 38-ship force as a means of living within fiscal constraints.

Existing Force of LSD-41/49 Class Ships

The Navy's existing force of LSD-type ships includes 12 Whidbey Island/Harpers Ferry (LSD-41/49) class ships (**Figure 1**).⁵ These ships were procured between FY1981 and FY1993 and entered service between 1985 and 1998. They have an expected service life of 40 years; the first ship will reach that age in 2025. The ships are about 609 feet long and have a full load displacement of about 16,800 tons. The class includes 12 ships because they were built at a time when the Navy was planning a 36-ship (12+12+12) amphibious force.

Figure 1. LSD-41/49 Class Ship



Source: U.S. Navy photo accessed May 7, 2014, at http://www.navy.mil/gallery_search_results.asp?terms=lsd+52&page=4&r=4. The Navy's caption for the photo states that the photo is dated July 13, 2013, and that it shows the *Pearl Harbor* (LSD-52) anchored off Majuro atoll in the Republic of the Marshall Islands during an exercise called Pacific Partnership 2013.

⁵ The class was initially known as the Whidbey Island (LSD-41) class. The final four ships in the class, beginning with *Harpers Ferry* (LSD-49), were built to a modified version of the original LSD-41 design, prompting the name of the class to be changed to the Harpers Ferry/Whidbey Island (LSD-41/49) class. Some sources refer to these 12 ships as two separate classes.

The first three LSD-41/49 class ships were built by Lockheed Shipbuilding of Seattle, WA, a firm that subsequently exited the Navy shipbuilding business. The final nine ships were built by Avondale Shipyards of New Orleans, LA, a shipyard that eventually became part of the shipbuilding firm Huntington Ingalls Industries (HII). HII is currently winding down Navy shipbuilding operations at Avondale and plans to have Avondale exit the Navy shipbuilding business. (HII continues to operate two other shipyards that build Navy ships—Ingalls Shipbuilding in Pascagoula, MS, and Newport News Shipbuilding in Newport News, VA.)

LX(R) Program

Total of 11 Ships Envisaged

Consistent with the planned 33-ship (11+11+11) amphibious force, the Navy envisages building 11 new LX(R)s as replacements for the 12 LSD-41/49 class ships. The LX(R) program was previously referred to as the LSD(X) program; the designation was changed to LX(R) in 2012 to signal that the replacement for the existing LSD-41/49 class ships would be an amphibious ship that would best meet future Navy and Marine Corps needs, regardless of whether that turns out to be a ship that one might refer to as an LSD.⁶

Program Schedule

The Navy wants to procure the first four LX(R)s in FY2020, FY2022, FY2024, and FY2026, and the remaining seven ships at a rate of one per year during the period FY2028-FY2034. If this procurement schedule were implemented, the Navy projects that the first two ships would enter service in FY2026 and the 11th would enter service in 2038.

The Navy's FY2015-FY2019 five-year shipbuilding plan schedules the procurement of the first LX(R) in FY2020, compared to FY2019 in the FY2014-FY2018 five-year plan, FY2018 in the FY2013-FY2017 five-year plan, and FY2017 in the FY2012-FY2016 five-year plan. In each of these five-year plans, the lead LX(R) ship was scheduled for procurement one year beyond the end of the five-year period.

Program Funding

As shown in **Table 1**, the LX(R) program has received a total of \$23.6 million in research and development funding through FY2014. The procurement funding shown for FY2019 is advance procurement (AP) funding for the first ship in the class.

⁶ For an article discussing the change in the program's designation, see Christopher P. Cavas, "Different Missions Might Await New USN Amphib," *DefenseNews.com*, November 12, 2012.

Table I. LX(R) Program Funding
Millions of dollars, rounded to nearest tenth

	Prior years	FY13	FY14	FY15 (req.)	FY16 (proj.)	FY17 (proj.)	FY18 (proj.)	FY19 (proj.)
Research and development	6.4	1.5	15.7	36.9	56.9	32.8	12.8	9.8
Procurement	0	0	0	0	0	0	0	174.0
TOTAL	6.4	1.5	15.7	36.9	56.9	32.8	12.8	183.8

Source: Navy FY2015 budget submission.

Notes: Research and development funding in FY2014 and prior years was provided in Project 2474 (LX(R) Design and Total Ship Integration) within Program Element (PE) 0603564N (Ship Preliminary Design and Feasibility Studies, a line item in the Navy's research and development account). Research and development funding in FY2015 and subsequent years to be provided in Project 2474 (LX(R) Design and Total Ship Integration) within PE 0604454N (LX(R)), a newly created line item in the Navy's research and development account. Procurement funding in FY2019 is advance procurement (AP) funding for the first ship in the class, which is scheduled for procurement in FY2020.

Unit Procurement Cost Target

A July 8, 2013, press report stated that the Navy wanted the LX(R) to have a unit procurement cost about one-third less than that of the LPD-17 design.⁷ The 11th LPD-17, which was procured in FY2012, has an estimated end cost of \$2,088.8 million (i.e., about \$2.1 billion), suggesting that the Navy wants the LX(R) to have a procurement cost of no more than about \$1.4 billion. A July 28, 2014, press report quotes Sean Stackley, the Assistant Secretary of the Navy for Research, Development and Acquisition (i.e., the Navy's acquisition executive), as stating that the Navy wants the LX(R) to have a unit procurement cost of \$1.43 billion.⁸

Analysis of Alternatives (AoA)

From the first quarter of FY2013 through March 2014, the Navy conducted an Analysis of Alternatives (AoA) to evaluate alternative design concepts for the LX(R). Concepts evaluated included the existing LPD-17 design (which apparently was included primarily as a baseline or reference design for helping the Navy to evaluate other LX(R) design concepts, because the Navy considers the existing LPD-17 design to be unaffordable for the purposes of the LX(R) program),⁹ a modified (reduced capability/reduced-cost) version of the LPD-17 design, brand new (i.e., "clean-sheet") designs, and foreign designs. A June 1, 2014, press report states that the Navy, as

⁷ Andrea Shalal-Esa, "U.S. Navy Seeks More Affordable Replacement For Dock Landing Ships," *Reuters*, July 8, 2013.

⁸ Sam LaGrone, "Cost Continues To Drive Quest For Next Amphib," *USNI News* (<http://news.usni.org>), July 28, 2014.

⁹ A May 29, 2014, press report quotes Vice Admiral William Hilarides, the Commander of the Naval Sea Systems Command (NAVSEA), as stating, in connection with the AoA, that "an LPD-17 variant that's built exactly like the current LPD-17 is off the table. It is unaffordable in the context of the ship we need to replace." (As quoted in Sam LaGrone, "NAVSEA: Affordability Prompted Second Look at LX(R)," *USNI News* (<http://news.usni.org>), May 29, 2014. The same quote (without the final two words) appears in Kris Osborn, "Navy Considers Commercial Technology for New Amphib," *DOD Buzz* (www.dodbuzz.com), June 1, 2014.)

part of the AoA, is considering incorporating commercial-ship components into the LX(R) design as a means of helping to minimize the ship's procurement cost.¹⁰

The Navy will use the results of the AoA to inform its decision on a preferred design solution for the LX(R); the Navy may announce that decision in the spring of 2015. In its prepared statement for a July 25, 2014, hearing on amphibious ships before the Seapower and Projection Forces subcommittee of the House Armed Services Committee, the Department of the Navy stated:

The Navy has completed the LX(R) Analysis of Alternatives (AoA) and is currently determining the ship's key performance parameters (KPP) and refining design and construction options. . . Affordability will be a key focus for this ship class. Industry will be involved in identifying cost drivers and proposing cost reduction initiatives to drive affordability into the design, production, operation, and maintenance of this ship class.¹¹

During the question-and-answer portion of the hearing, Sean Stackley, the Assistant Secretary of the Navy for Research, Development and Acquisition (i.e., the Navy's acquisition executive), stated:

First, I wouldn't say that the AOA is complete. This is an iterative process, so the team has come forward with I'll call it first pass on details. And we sit down, and we hammer them with questions, go back for a second pass. We're about on a third pass right now.¹²

At another point in the hearing, Stackley stated the following regarding design concepts examined in the LX(R) AoA:

And so we're looking at several alternatives. The first clear alternative is you have a hot production line. You have a known entity in terms of LPD-17. So can you reuse it? The answer is the LPD-17 class will not be the LX(R). But the hull form does provide a well known baseline that we're looking at a modified LPD-17 to see if we can drive that in the right direction in terms of affordability for the LX(R).

We also are looking at foreign designs. There are—there are a number of foreign designs that fit—fit an LX(R) mission profile. So those are on the table as well. This would not be to repeat those designs. Frankly, it would require some sort of teaming agreement between our industrial base and a foreign navy that owns that design to see if in fact it could be adapted. We're doing that for thoroughness.

And then you look at clean sheet designs. Now, the beauty of a clean sheet design is you can do anything with it. And it can cost what you want it to cost. However, in going from that paper design to reality, we are very mindful of the risks that that introduces and frankly the history that we have of underestimating the cost and complexity of going from paper to digits to steel.

¹⁰ Kris Osborn, "Navy Considers Commercial Technology for New Amphib," *DOD Buzz* (www.dodbuzz.com), June 1, 2014.

¹¹ Statement of the Honorable Sean J. Stackley, Assistant Secretary of the Navy (Research, Development and Acquisition), and General John M. Paxton, Jr., Assistant Commandant of the Marine Corps, and Vice Admiral Joseph P. Aucoin, Deputy Chief of Naval Operations for Warfare Systems, Before the Subcommittee on Seapower and Projection Forces of the House Armed Services Committee on Amphibious Fleet Requirements, July 25, 2014, p. 5.

¹² Transcript of hearing.

So those—that's the trade-space in the AOA. It's bringing those clean set of requirements in that the Marine Corps requires for their lift capability, looking at those alternatives, and figuring out across that family of alternatives how do we drive this into an affordability box that we've set for the program.¹³

HII, the builder of LPD-17 class ships, has promoted a modified LPD-17 as the design solution for the LX(R) program, citing the capabilities of the LPD-17 hull design, the reduced up-front design costs of modifying an existing design compared to those of developing an entirely new design, and the potential benefits in terms of life-cycle operation and support (O&S) costs of building the LX(R) to a design that uses the same basic hull and many of the same components as the LPD-17 design. Certain Marine Corps officials, citing their satisfaction with the LPD-17 design, have expressed support for a modified LPD-17 design as the design solution for the LX(R) program.¹⁴ Other observers, noting that the LPD-17, with a full load displacement of about 25,000 tons, is considerably larger than the LSD-41/49 class ships, have questioned whether a modified LPD-17 can meet the Navy's reported unit procurement cost target for the LX(R) program.

¹³ Transcript of hearing. Later in the hearing, he stated:

The alternatives that were looked at, as I was describing earlier, the first clear one is using the hot production line and starting with an LPD-17 hull form and then looking at how you can effectively descope some of the capabilities and also some of the cost drivers, go after the cost drivers to get the LPD-17 hull form with the lift capacities that we need for LX(R) inside of the affordability box that we've set for the program.

The second is a clean sheet design. All AOAs include a clean sheet design.

So you would start with a list of lift capabilities that you need and then other enabling capabilities, speed, command and control capabilities that need to be added to the platform and then now you're dealing with a more parametric approach towards determining what size, what shape, what cost you would be in for a new—a new design LX(R).

And that does bring with it all the risks associated with a new start program in terms of how well do you understand the requirements that you just put down on paper. What does that carry forward in terms of risk regarding either the technology that you're planning on employing or the costs that come with that?

And then the third is to take a look at other existing designs or concepts. And I described the foreign designs and we're going through those dutifully to understand.

We've got all the glossies (ph). Now we're digging down into the details in terms of, "OK, are they really designed for the level of survivability that we would plan on including in our-- in our future LX(R)"?

And then you have the hybrids [i.e., hybrid designs that mix the features of some of the above-mentioned designs]. You start to take a look at—well, honestly, we took a look at (inaudible) NLP [sic; MLP, the Mobile Landing Platform ship], which has incredible lift capacity. Does that potentially play for the roles and missions of an LX(R)?

So there's—there's been a very broad field of alternatives that we've looked at and all the trades that go with what degree of—what level of capability—what are the risks either in terms of operational risks or in terms of cost or technology that you're anticipating and then what are the costs that come with that?

And that came down to a smaller number of alternatives that we're—we're, again, trying to drive into that affordability box that we've got to hit.

(Transcript of hearing.)

¹⁴ A group of 20 Marine Corps generals expressed support for the LPD-17 hull form as the design solution for the LX(R) program in a letter to the Senate Armed Services Committee dated March 25, 2014. See Lara Seligman, "Officials On LX(R): LPD-17 Design Is Best Fit For Marine Lift Requirements," *Inside the Navy*, April 7, 2014. See also Megan Eckstein, "Amos: LPD Hull Production Should Continue, Serve As LSD Replacement," *Inside the Navy*, April 15, 2013.

At a March 26, 2014, hearing before the Seapower and Projection Forces subcommittee of the House Armed Services Committee, Sean Stackley stated that

... when you take a look at the LSD-41/49 class and you say well, should we continue with the LPD-17 hull form as a replacement for LSD-41/49 class? The answer is that's a lot more capability than the LSD-41/49 have today.

But the other thing the Marine Corps is wrestling with is their vehicles their equipment that they deploy with is a lot more than they had when the LSD-41/49 class was being built.

So I think General Glueck and his team have worked hard in terms of trying to determine what the future lift requirements are. And under those parameters the LPD-17 hull form is a better fit for the Marine Corps requirement, independent of that 38, 33 total number of ship requirement.

Now, the other thing we have to balance that with is affordability. And that's been one of the challenges. So right now we are completing the analysis of alternatives for the LSD-41 replacement, referred to as LXR. And the LPD-17 is prominent in that analysis of alternatives. And what we have to wrestle with is how do we get to a hull form that does provide the degree of lift and capability that the LPD-17 does, but within an affordable [budget] top line?¹⁵

Another witness at the hearing—Lieutenant General Kenneth Glueck, Jr., USMC, Deputy Commandant of the Marine Corps for Combat Development and Integration, and Commanding General, Marine Corps Combat Development Command—stated that

... when you look at the LPD-17 it's been a success story for the Navy-Marine Corps team. And we're working through a lot of the bugs in that [class of ship] right now. So we view it as [an] improving performer.

As you look at what I believe are the requirements for the new normal that exists out there today, you know it's going to be independent deployers [ships that can deploy on their own when appropriate] as you know Admiral [Samuel] Locklear [Commander, U.S. Pacific Command] has talked about that his requirement out there as a combatant commander is in the neighborhood of you know 50, 54 [forward-deployed Navy] ships [in the Pacific] to maintain that [level of U.S.] engagement.

And we see that ability to be an independent deployer that the LPD-17 hull and form brings in terms of their ability to do C2 [command and control], the aviation capability, the medical capability and the surface capability are all the type of capability that you want in a future ship that—to be able to do the things that our nation requires them to do for [maintaining regional] stability.¹⁶

At the July 25, 2014, hearing on amphibious ships before the same subcommittee, Stackley, when asked about using the basic LPD-17 hull form as the basis for the LX(R) design, stated:

Yes, sir. Let me try to wrap this all together—the advantages of reuse of the LPD hull form, the affordability issues that we're challenged with, and then the specific requirements that LX(R) that we're drafting on LX(R).

¹⁵ Transcript of hearing.

¹⁶ Transcript of hearing.

As the ACMC [General John Paxton, Jr., Assistant Commandant of the Marine Corps—another witness at the hearing] described, globally in discussing the LX(R), as a replacement for the LSD-41, -49 class, we have to first and foremost ensure that the LX(R) provides the lift capacity that the Navy-Marine Corps team needs. And if you look at what the LSD-41, -49 [class ships] provide today, it's LCAC [air-cushioned landing craft] spots that we're going to have to replace. They [also] bring a lot of cargo—a lot of cargo cubed [i.e., cubic square feet of cargo space], which is not a[n amphibious lift] shortfall issue so much as vehicle square [i.e., square footage for vehicles]. So vehicle space, LCAC well deck spots, and then flight deck capacity. So if you look at that, that's exactly what the LPD-17 provides.

Now, the reality is [the existing] LPD-17 [design] provides a lot more of that [type of capability] than the ship class that she would potentially be replacing. So what we've got to do, then, is moderate between the capacity of an LPD-17 and the cost that comes with that, and then the true requirements that we need for the LX(R). And that's—that's the debate, the tension that's going on right now inside the analysis of alternatives is trying to temper down—temper down those capacities with cost in mind.¹⁷

Another witness at the hearing—General John Paxton, Jr., the Assistant Commandant of the Marine Corps, when asked to comment on the same question, stated:

You know, we are—"we" being the Marine Corps—are huge fans of the LPD-17. It has capability that we have not had before. It has capacity that we have not had before in terms of well deck, flight deck, Marines, everything.

So, the opportunity to continue that hull form or something similar to it has great operational advantage to us. It gives us the ship-to-shore [capability], sovereign launch and recovery capability that we need. It gives us maintenance capability that we need. It gives us command and control capability for disaggregated operations in case we have to split up that Marine expeditionary unit in two or three different locations.

So in terms of the responsiveness, the versatility, the sustainability, the LPD-17 is a great platform, so [the issue is] how we capture the value of that platform and some of those key either forcing function[s] or limiting factors. For example, the secretary [Stackley] and I were talking earlier about just command and control. And we have greatly enhanced command and control capability with the LPD-17 that we didn't have before.

So, the ability to maintain that skill set and those capabilities on the LX(R) is really---is important to us, sir.¹⁸

Potential Bidders

The Navy intends to conduct a competition to build the LX(R). The LX(R) program is one of two new multi-ship shipbuilding programs that the Navy expects to award in the next few years—the other is the TAO(X) fleet oiler program, whose lead ship is to be procured in FY2016.¹⁹ Both of these programs are expected to attract strong bidding interest from U.S. shipyards. The Navy's

¹⁷ Transcript of hearing.

¹⁸ Transcript of hearing.

¹⁹ For more on the TAO(X) program, see CRS Report R43546, *Navy TAO(X) Oiler Shipbuilding Program: Background and Issues for Congress*, by Ronald O'Rourke.

decisions on which yard or yards will build these two classes of ships will affect the U.S. shipbuilding industrial base.

Potential bidders for the LX(R) program include HII's Ingalls Shipbuilding (HII/Ingalls) of Pascagoula, MS; General Dynamics' National Steel and Shipbuilding Company (GD/NASSCO) of San Diego, CA; General Dynamics' Bath Iron Works (GD/BIW) of Bath, ME; and possibly other shipyards as well.

HII/Ingalls, along with HII/Avondale, are the builders of the LPD-17 class ships. (As noted earlier, HII is currently winding down Navy shipbuilding operations at Avondale and plans to have Avondale exit the Navy shipbuilding business.) If the Navy were to select a modified LPD-17 design as the design solution for the LX(R) program, HII/Ingalls would be able to incorporate its production learning curve on the LPD-17 program into its bid for the LX(R) program. That production learning curve would be extended if a 12th LPD-17 were procured at some point between now and the start of LX(R) procurement (see next section).

Funding for a 12th LPD-17 Class Ship

Although the Navy plans for the 11th LPD-17 class ship to be the final ship in the LPD-17 program, Congress, in marking up the Navy's proposed FY2013 budget, provided \$263.3 million in advance procurement (AP) funding for the procurement of a 12th LPD-17. A 12th LPD-17, if procured, could be built in addition to the 11 planned LX(R)s, which would make for an eventual amphibious force of 34 rather than 33 ships, or could become one of a force of 33 amphibious ships, perhaps taking the place of one of the 11 planned LX(R)s. Building a 12th LPD-17 class ship between now and FY2020 would extend HII/Ingalls' LPD-17 production learning curve heading into the competition for the LPD-17 program.

The \$263 million in FY2013 AP funding was reduced by the March 1, 2013, sequester to \$243.0 million. As of early 2014, the Navy had not committed this funding to the procurement of an additional LPD-17. The Navy's FY2015 budget submission includes no follow-on funds for completing the procurement cost of an additional LPD-17; the submission does include \$67.5 million for LPD-17 "program closeout/support" costs in FY2015-FY2017, including \$12.6 million in FY2015. The Navy's report on its FY2015 30-year shipbuilding plan, submitted to Congress in July 2014, states:

Assuming the \$243 million of AP [funding provided] in FY2013 was leveraged, the end cost [i.e., total procurement cost] of a 12th [LPD-17 class] ship [procured] in FY2014 is estimated at \$2.13 billion, leaving a balance of approximately \$1.9 billion of full funding required in FY2014. Accordingly, the DON [Department of the Navy] has concluded that procurement of a twelfth LPD[-17] is not an affordable alternative to meeting the 33 ship amphibious force requirement.²⁰

In its prepared statement for the July 25, 2014, hearing on amphibious ships, the Department of the Navy stated:

²⁰ U.S. Navy, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for FY2015*, June 2014, p. 25.

The FY 2015 Shipbuilding Plan does not include a request for a 12th LPD. The Navy's Force Structure Assessment (FSA), completed in 2012, identified a requirement for an eleven LPD 17 Ship Class. Additionally, the Navy's 30-Year Shipbuilding Plan currently supports an eleven-ship class profile. If fully funded, the Navy can execute the acquisition of a 12th LPD, but the requirement cannot be supported at the expense of other items in the PB-15 request.

The FY 2013 Continuing and Furthering Appropriations Bill (P.L. 113-6) added \$263 million of Advanced Procurement (AP) funding for a 12th LPD 17 amphibious transport dock ship. With the sequestration mark of approximately \$20 million, the net FY[20]13 appropriation for the 12th ship is \$243 million. The end cost of a fully scoped 12th LPD is estimated at \$2.023 billion. If the 12th ship were to be constructed, the Navy would build it as a bridge to LX(R), implementing some of the affordability initiatives identified during the recent design studies effort.²¹

During the question-and-answer portion of the July 25, 2014, hearing, the following exchange occurred:

REPRESENTATIVE J. RANDY FORBES (CHAIRMAN):

Mr. Secretary, you—we've talked about the LPD, and you've been very clear on that. I think the gentleman from Mississippi [Representative Steven Palazzo] has a little bit of an interest in that issue too.

And, as he pointed out, we have anticipated an additional \$800 million on that [12th LPD-17 being provided in FY2014]. When does the Navy anticipate using that incremental funding authority [for procuring a 12th LPD-17], if that ultimately passes both houses, which I think it will?

And can you address a little bit your concerns about the industrial base that we're looking at with amphibious ships now?

SEAN STACKLEY:

Yes, sir.

It's difficult to answer that first question, because with—with the, I'll call it advanced procurement [funding] and incremental funding [authority] that's been provided by Congress either in [FY]'14 or in the various versions of the bills in [FY]'15, we are still a billion-plus [dollars] short of the funding requirements for another LPD 17 class ship.

And that billion-plus [dollar issue] has to enter into a budget process where we've got other bills that are, frankly, a higher priority. And I'll just use the [aircraft] carrier. We had a hearing where we talked about the refueling of the [existing aircraft] carrier [George Washington, CVN-73].²² We've got—we've got to work—we're working that inside of that—that budget and others that are competing for that [budget] space.

²¹ Statement of the Honorable Sean J. Stackley, Assistant Secretary of the Navy (Research, Development and Acquisition), and General John M. Paxton, Jr., Assistant Commandant of the Marine Corps, and Vice Admiral Joseph P. Aucoin, Deputy Chief of Naval Operations for Warfare Systems, Before the Subcommittee on Seapower and Projection Forces of the House Armed Services Committee on Amphibious Fleet Requirements, July 25, 2014, p. 6.

²² For more on the issue of funding for a refueling complex overhaul for CVN-73, see CRS Report RS20643, *Navy Ford (CVN-78) Class Aircraft Carrier Program: Background and Issues for Congress*, by Ronald O'Rourke.

So we've got competition to go into the budget and add these priorities, at the same time we've got all of the risk associated with sequestration on the back end.

So I cannot look at you today and give you a sense of confidence that the Navy is going to be able to budget that additional billion-plus [dollars for a 12th LPD-17] in PB '16 [President's Budget for FY2016].

Now, it's—we're halfway through the process, and there's gonna be a lot more movement between now and when the budget comes over to the—to the Hill. But the challenges are huge, in terms of being able to fund the balance.

And absent that full funding, not necessarily one year, but using the incremental authority, we can't move forward in terms of contracting for a ship. We've got to show the funding in the budget. And so, that's—that's the paradox that we've got today.

So I greatly appreciate your—your intent and the support for the ship, but we are still well short of the funding required to place that ship under contract.

Now, in terms of the industrial base, and here's where it's—here's where it's critical, because all the—all the points that the ACMC [General John Paxton, Jr., Assistant Commandant of the Marine Corps—another witness at the hearing] has made regarding [the requirement for a force of] 38 versus 33 [amphibious ships] and where we are today [in terms of numbers of amphibious ships in the fleet], the reality is if we—if we put an LPD 28 [i.e., a 12th LPD-17 class ship] under contract in 2016, it wouldn't enter the fleet until [the 20]22, [20]23 timeframe.

So that's not a near-term fix to a present shortfall to the 33 amphib[ious ship] requirement, but it is an immediate fix to a [workload] valley that the amphibious shipbuilding industrial base is marching into during this period, as I described, between the completion of the LPD 26 and 27, the last of those two lines, and the start of the LX(R) replacement, which isn't until the 2020s.

So you're looking at a five, six, seven year period where that industrial base is being drawn down to the only amphibious ships that will be in construction will be that LHA class [of amphibious assault ships]. So, specifically, [meaning] the LHA 7. It [the industrial base] will be at—it will be at its low point, going back 25 to 30 years, and that is a concern for the Navy.²³

Issues for Congress

FY2015 Funding for LX(R) Program

One issue for Congress is whether to approve, reject, or modify the Navy's request for FY2015 research and development funding for the LX(R) program.

²³ Transcript of hearing.

LX(R) Cost, Capability, and Acquisition Strategy

Another potential issue for Congress for FY2015 is whether to provide the Navy with guidance concerning the cost, capability, or acquisition strategy for the LX(R) program. In assessing this issue, potential questions for Congress include the following:

- How did the Navy arrive at its target unit procurement cost for the LX(R) program? Does this target cost represent an appropriate balance between ship capability and ship cost?
- How likely is it that the Navy will be able to procure a ship with sufficient capability within this cost? If a ship with sufficient capability cannot be procured within this cost, should the Navy respond to this by accepting a higher cost or reducing its operational requirements?
- What is the Navy's acquisition strategy for the program? Does the Navy envisage the ships being built by one yard (or industry team), or more than one? Does the Navy intend to use annual contracting for the program, or multiyear contracting (i.e., multiyear procurement [MYP] or block buy contracting)?²⁴ How does the Navy intend to employ competition in determining which yard or yards builds LX(R)s? How will the Navy factor industrial-base considerations into its determination of which yard or yards will build the ships?

FY2015 Funding for 12th LPD-17 Class Ship

Another potential issue for Congress is whether to provide funding in FY2015 for the procurement of an additional San Antonio (LPD-17) class amphibious ship, in part as an industrial base bridge from the LPD-17 program to the start of the LX(R) program. In assessing this issue, potential questions for Congress include the following:

- How much procurement funding, in addition to the \$243.0 million available from the FY2013 appropriation, would be needed to complete the funding for procuring an additional LPD-17 class ship?
- How would procuring an additional LPD-17 class ship affect the Navy's amphibious lift capabilities and amphibious ship operations?
- How would it affect the shipbuilding industrial base, particularly the part of the base involved in building amphibious ships?
- How, if at all, would it affect the coming competition for the LX(R) program?

²⁴ For more on MYP and block buy contracting, see CRS Report R41909, *Multiyear Procurement (MYP) and Block Buy Contracting in Defense Acquisition: Background and Issues for Congress*, by Ronald O'Rourke and Moshe Schwartz.

Legislative Activity for FY2015

FY2015 Budget

The Navy's proposed FY2015 budget was submitted to Congress on March 4, 2014. As shown in **Table 1**, the budget requests \$36.9 million in research and development funding for the LX(R) program. The funding is requested in Program Element (PE) 0604454N, entitled LX(R), which is line 78 in the Navy's FY2015 research and development account.

The Navy's proposed FY2015 budget requests \$12.6 million in procurement funding for the LPD-17 program for "program closeout/support" costs. It does not request any procurement funding for the procurement of an additional (i.e., 12th) LPD-17 class ship.

FY2015 National Defense Authorization Act (H.R. 4435/S. 2410)

House

The House Armed Services Committee, in its report (H.Rept. 113-446 of May 13, 2014) on H.R. 4435, recommends approving the Navy's request for \$36.9 million in research and development funding for the LX(R) program. (Page 428, line 078.)

The report recommends \$800 million in procurement funding for the procurement of an additional (i.e., 12th) LPD-17 class ship. The report also recommends approving the Navy's request for \$12.6 million in FY2015 procurement funding for the LPD-17 program for "program closeout/support" costs. (For both recommendations, see page 395, line 010.)

Section 122 of the bill as reported states:

SEC. 122. CONSTRUCTION OF SAN ANTONIO CLASS AMPHIBIOUS SHIP.

(a) In General- The Secretary of the Navy may enter into a contract beginning with the fiscal year 2015 program year for the procurement of one San Antonio class amphibious ship. The Secretary may employ incremental funding for such procurement.

(b) Condition on Out-year Contract Payments- A contract entered into under subsection (a) shall provide that any obligation of the United States to make a payment under such contract for any fiscal year after fiscal year 2015 is subject to the availability of appropriations for that purpose for such fiscal year.

Senate

The Senate Armed Services Committee, in its report (S.Rept. 113-176 of June 2, 2014) on S. 2410, recommends approving the Navy's request for \$36.9 million in research and development funding for the LX(R) program. (Page 358, line 78.) The report also recommends approving the Navy's request for \$12.6 million in FY2015 procurement funding for the LPD-17 program for "program closeout/support" costs. (Page 324, line 10.)

Section 123 of S. 2410 as reported states:

SEC. 123. AUTHORITY TO TRANSFER CERTAIN FUNDS FOR REFUELING OF AIRCRAFT CARRIER AND CONSTRUCTION OF AMPHIBIOUS SHIP.

(a) In General- To the extent provided in appropriations Acts, upon a determination described in subsection (b), the Secretary of the Navy is authorized to transfer funds available in Shipbuilding and Conversion, Navy or any other Navy procurement account for either or both of the following purposes:

(1) Up to \$650,000,000 to conduct a refueling and complex overhaul of the U.S.S. George Washington (CVN-73).

(2) Up to \$650,000,000 for the ship construction of a San Antonio class amphibious ship.

(b) Determination- A determination described in this subsection is a determination by the Secretary of the Navy that--

(1) unobligated balances are available in the program or programs from which funds will be transferred pursuant to subsection (a) due to slower than expected program execution; and

(2) the transfer of funds will fill a high priority military need and is in the best interest of the Department of the Navy.

(c) Contingent Authorization- The Secretary of the Navy is authorized to enter into a contract for the procurement of one San Antonio class amphibious ship beginning in fiscal year 2015, and to use incremental funding for the procurement of that ship, if additional funds are made available for such purpose in fiscal year 2015 and the Secretary determines that such procurement will fill a high priority military need and is in the best interests of the Department of the Navy.

(d) Effect on Authorization Amounts- A transfer made from one account to another under the authority of this section shall be deemed to increase the amount authorized for the account to which the amount is transferred by an amount equal to the amount transferred.

(e) Construction of Authority- The transfer authority under this section is in addition to any other transfer authority provided in this Act.

Regarding Section 123, S.Rept. 113-176 states:

Authority to transfer certain funds for refueling of aircraft carrier and construction of amphibious ship (sec. 123)

The committee recommends a provision that would authorize the Secretary of the Navy to transfer funds available in the Shipbuilding and Conversion, Navy (SCN), or other Navy procurement account for either or both of the following purposes:

(1) Up to \$650.0 million to conduct a refueling and complex overhaul of the USS George Washington (CVN-73).

(2) Up to \$650.0 million to build a San Antonio-class amphibious ship.

The provision would require that the Secretary make a determination that unobligated balances to be transferred are available due to slower than expected program execution, and the transfer of funds will fill a high priority military need and is in the best interest of the Department of the Navy.

It is the committee's intent that the Navy proceed with the refueling and complex overhaul of the USS George Washington (CVN-73) should additional funds be made available in fiscal year 2015 for that purpose.

Finally, the provision would authorize the Secretary to use incremental funding for a San Antonio-class ship if additional funds are made available in fiscal year 2015 for that purpose and the Secretary determines that such procurement will fill a high priority military need and is in the best interest of the Department of the Navy.

The committee expects that, if the Secretary chooses to transfer funds for the San Antonio-class program in fiscal year 2015, the Secretary will use funds from fiscal year 2015 and fiscal year 2016 to fully fund any new San Antonio-class ship put on contract during fiscal year 2015 or fiscal year 2016. (Pages 8-9)

FY2015 DOD Appropriations Act (H.R. 4870)

House

The House Appropriations Committee, in its report (H.Rept. 113-473 of June 13, 2014) on H.R. 4870, recommends reducing by \$6 million the Navy's request for \$36.9 million in research and development funding for the LX(R) program, with the reduction being for "LX(R) program development growth." (Page 229, line 78, and page 236, line 78.) The report also recommends approving the Navy's request for \$12.6 million in FY2015 procurement funding for the LPD-17 program for "program closeout/support" costs. (Page 163, line 10.)

Senate

The Senate Appropriations Committee, in its report (S.Rept. 113-211 of July 17, 2014) on H.R. 4870, recommends approving the Navy's request for \$36.9 million in research and development funding for the LX(R) program. (Page 202, line 78.) The report also recommends \$800 million in procurement funding for the procurement of an additional (i.e., 12th) LPD-17 class ship. The report also recommends reducing by \$12.6 million (i.e., reducing to zero) the Navy's request for \$12.6 million in FY2015 procurement funding for the LPD-17 program for "program closeout/support" costs, with the reduction being for "Improving funds management: Program closeout ahead of need." (Page 138, line 10, and page 139, line 10.)

S.Rept. 113-211 states:

Amphibious Warships.—According to section 123 of S. 2410, the National Defense Authorization Act for Fiscal Year 2015, as reported, the Secretary of the Navy is authorized to incrementally fund an additional LPD-17 San Antonio-class amphibious ship. The Committee continues to be concerned about the level of risk being assumed with amphibious lift capability. Therefore, to help address the amphibious lift shortfall that exists today, the Committee recommendation provides \$800,000,000 to incrementally fund an additional LPD-17 class amphibious ship. (Page 141)

S.Rept. 113-211 also states:

Shipbuilding Industrial Base and Workload Allocation.—The Committee remains concerned generally about the overall health of the shipbuilding industrial base and specifically about the health of the non-nuclear surface combatant shipbuilding industry. The Committee

reiterates its commitment to the goal of reducing costs and increasing value in the shipbuilding program and believes that cooperative workload allocation agreements between the Navy and industry may provide an alternative method to obtain efficiency and economies in Navy ship design and construction with the goals of closing the shortfalls in the fleet and retain the shipbuilding industrial base needed for future military requirements. Therefore, the Secretary of the Navy is directed to engage industry in discussions on future shipbuilding workload distribution and methods to ensure the viability of the non-nuclear shipyards over the long term.

For instance, when the LPD-17 program was experiencing significant production issues, the Department of the Navy entered into a workload agreement, “Memorandum of Understanding Concerning the Reallocation of LPD-17 and DDG-51 Ship Construction Workload” (SWAP 1), with shipbuilders on June 17, 2002. The purpose of the agreement was to reallocate workload to ensure “stability at both yards, stabilize and reduce total projected shipbuilding costs for the LPD-17 Program, and maintain properly balanced sources of supply for future Navy surface combatant shipbuilding”.

The agreement also requires the Navy to award a compensatory DDG-51 or equivalent workload if the Navy awards a shipbuilding contract for LPD 28. The Committee understands that the Navy considers this agreement to remain in full force and effect, and that the Navy will engage with shipbuilders involved in the agreement to discuss workload distribution. While Congress is not a party to this agreement, the Committee directs the Navy to submit a report to the congressional defense committees no later than March 1, 2015, on the Navy’s options and potential courses of action to fulfill the requirements of the SWAP 1 agreement preceding or concurrent with when LPD 28 is placed under contract. The report should also address strategies to ensure the viability and stability of the non-nuclear shipyards over the long term to preserve the defense maritime industrial base and achieve the highest level of performance and quality from the shipbuilders. (Pages 139-140)

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