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

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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. LX(R)s are to replace 12 aging Whidbey Island/Harpers Ferry (LSD-41/49) class amphibious ships, the first of which will reach age 40 in 2025.

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.

An October 20, 2014, press report stated that Secretary of the Navy Ray Mabus had signed a decision memorandum dated October 14 designating a design based on that of the Navy's San Antonio (LPD-17) class amphibious ship as the Navy's preferred alternative for the design of the LX(R).

The Navy's proposed FY2016 budget requested \$46.5 million in research and development funding for the LX(R) program, and \$550 million to complete the estimated procurement cost of a 12th LPD-17 class amphibious ship.

Issues for Congress include the following:

- whether to approve, reject, or modify the Navy's FY2016 requests for research and development funding for the LX(R) program and procurement funding for a 12th LPD-17 class ship;
- whether, in response to the procurement of a 12th LPD-17 class ship, the LX(R) program should be reduced from 11 ships to 10 ships;
- whether to approve, reject, or modify the Navy's proposal to use a combined solicitation for contract design support for the LX(R) program, the detailed design and construction of an amphibious assault ship called LHA-8 that the Navy wants to procure in FY2017, and the detailed design and construction of the first six TAO-205 class oilers (previously known as TAO[X]s), and to limit the bidding in this combined solicitation to HII/Ingalls and GD/NASSCO; and
- whether to accelerate the procurement of the first LX(R) from FY2020 to an earlier year.

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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.

The LX(R) program raises a number of oversight issues for Congress. Decisions Congress makes on the LX(R) program will affect Navy capabilities and funding requirements, and the U.S. shipbuilding industrial base.

Background

Strategic and Budgetary Context

For an overview of the strategic and budgetary context in which this and other Navy shipbuilding programs may be considered, see CRS Report RL32665, *Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress*, by Ronald O'Rourke.

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 forces moving north from Saudi Arabia. (See CRS Report 91-421, *Persian Gulf War: Defense Policy Implications for* (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 newly revised 308-ship force structure goal calls for achieving and maintaining a 34-ship amphibious force that includes 11 LHA/LHA-type amphibious assault ships, 12 San Antonio (LPD-17) class amphibious ships, and 11 LSD/LX(R)-type amphibious ships (11+12+11). Navy and Marine Corps officials had previously agreed that a 33-ship (11+11+11) 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 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. In February and March 2015 testimony, the Navy has explained that the 33-ship (11+11+11)

(...continued)

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.

requirement has been revised to a 34-ship (11+12+11) requirement to reflect the anticipated procurement in FY2016 of a 12th LPD-17 class ship.⁵

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 agreed to accept the operational risks associated with having a 33-ship (now 34-ship) force rather than a 38-ship force as a means of living within fiscal constraints.⁶

The requirement for a force of 34 or 38 amphibious ships relates primarily to meeting wartime needs for amphibious lift. Navy and Marine Corps officials have also testified that fully meeting U.S. regional combatant commander (COCOM) requests for day-to-day forward deployments of amphibious ships would require a force of 50 or more amphibious ships. For example, in testimony to the Seapower and Projection Forces subcommittee of the House Armed Services Committee on February 25, 2015, Marine Corps Lieutenant General Kenneth J. Glueck, Jr., Deputy Commandant for Combat Development and Integration and Commanding General of the Marine Corps Combat Development Command, stated that the number needed to fully meet COCOM demands for forward-deployed amphibious ships is "close to 54."⁷

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**).⁸ 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.

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.)

⁵ See, for example, the spoken remarks of Vice Admiral Joseph P. Mulloy, Deputy Chief of Naval Operations for Integration of Capabilities and Resources, at a February 25, 2015, hearing on Department of the Navy acquisition programs before the Seapower and Projection Forces subcommittee of the House Armed Services Committee, and at a March 18, 2015, hearing on Navy shipbuilding issues before the Seapower subcommittee of the Senate Armed Services Committee, as reflected in the transcripts of the hearings.

⁶ For a more detailed review of the 33- and 38-ship force structure requirements, see Appendix A of CRS Report RL34476, *Navy LPD-17 Amphibious Ship Procurement: Background, Issues, and Options for Congress*, which is an archived report.

⁷ Source: Spoken testimony of Lieutenant General Glueck, as reflected in transcript of hearing.

⁸ 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.

Figure I. 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.

LX(R) Program⁹

Total of 11 Ships Envisaged

Consistent with the newly revised 34-ship amphibious force level goal, the Navy envisages building 11 new LX(R)s as replacements for the 12 LSD-41/49 class ships.

Program Schedule

The Navy wants to procure the first LX(R) in FY2020 and the remaining 10 at a rate of one per year from FY2022 through FY2031.

The Navy's FY2012 budget submission scheduled the procurement of the first LX(R) for FY2017. The Navy's FY2013, FY2014, and FY2015 budget submissions deferred the scheduled procurement of the first LX(R) progressively, to FY2018, FY2019, and FY2020, respectively. The Navy's FY2016 budget submission, like the Navy's FY2015 budget submission, schedules it for FY2020.

⁹ 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. 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.

Program Funding

Table 1 shows LX(R) program funding for FY2015-FY2020. The procurement funding shown for FY2019 is advance procurement (AP) funding for the first ship in the class.

Table 1. LX(R) Program Funding
Millions of dollars, rounded to nearest tenth

	FY15	FY16 (req.)	FY17 (proj.)	FY18 (proj.)	FY19 (proj.)	FY20 (proj.)
Research and development	36.9	46.5	28.7	12.4	9.5	9.7
Procurement	0	0	0	0	170.8	1,624.1
TOTAL	36.9	46.5	28.7	12.4	180.3	1,633.8

Source: Navy FY2016 budget submission.

Notes: Research and development funding is Project 2474 (LX(R) Design and Total Ship Integration) within PE (Program Element) 0604454N (LX(R)). 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

The Navy’s unit procurement cost targets for the LX(R) program are \$1,643 million in constant FY2014 dollars for the lead ship, and an average of \$1,400 million in constant FY2014 dollars for ships 2 through 11.¹⁰

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),¹¹ 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 stated that the Navy, as part of the AoA, considered incorporating commercial-ship components into the LX(R) design as a means of helping to minimize the ship’s procurement cost.¹² The Navy used the results of the AoA to inform its decision on a preferred design solution for the LX(R).

HII, the builder of LPD-17 class ships, 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,

¹⁰ Source: Navy briefing on the LX(R) program to CRS and Congressional Budget Office (CBO), March 23, 2015.

¹¹ 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.)

¹² Kris Osborn, “Navy Considers Commercial Technology for New Amphib,” *DOD Buzz* (www.dodbuzz.com), June 1, 2014.

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. Marine Corps leaders, citing their satisfaction with the LPD-17 design, expressed support for a modified LPD-17 design as the design solution for the LX(R) program.¹³ 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, questioned whether a modified LPD-17 could meet the Navy's reported unit procurement cost target for the LX(R) program.

Design Based on LPD-17 Hull Designated by Navy as Preferred Alternative for LX(R)

An October 20, 2014, press report stated that Secretary of the Navy Ray Mabus had signed a decision memorandum dated October 14 designating a design based on that of the Navy's San Antonio (LPD-17) class amphibious ship as the Navy's preferred alternative for the design of the LX(R). According to the press report, the decision memorandum had been previously signed by Admiral Jonathan Greenert, the Chief of Naval Operations (CNO), General Joseph Dunford, Commandant of the Marine Corps, General James Amos, former Commandant of the Marine Corps, and Sean Stackley, Assistant Secretary of the Navy for Research, Development and Acquisition. According to the press report, the decision memorandum stated that preliminary design efforts for the LX(R) would begin "immediately."¹⁴

A November 5, 2015, press report states:

The Navy and Marine Corps were able to design an LX(R) dock landing ship replacement with greater capability for less money by starting with the higher-end San Antonio-class LPD-17 design, stripping away unneeded features and adding back in desired ones, service officials said last week....

Capt. Bryon Johnson, head of the amphibious warfare branch in the expeditionary warfare directorate (OPNAV N953), said at the same conference that his office is still working through descoping the LPD design and deciding how much capability to add back in, but he praised the process the Navy had chosen.

When the Navy first started thinking about an LSD replacement, "there was a lot of effort to try to gold-plate the ship. We wanted it to do everything," Johnson said.

"We wanted it to be able to carry six connectors, surface connectors, we wanted it to be able to carry a greater number of Marine Corps aircraft to support vertical takeoff capability. And once we started adding all of that up, we realized very rapidly that there was no way that we'd be able to afford essentially what was going to be a new start ship design to replace our LSD 41/49 class."

¹³ 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.

¹⁴ Lara Seligman, "Mabus Signs Decision Memo: LPD-17 Variant Preferred Platform For LX(R)," *Inside the Navy*, October 20, 2014. See also Sam LaGrone, "Memo: Hull Based On San Antonio Design Is Navy's Preferred Option For Next Generation Amphib," *USNI News*, October 20, 2014; Lara Seligman, "Senior Navy Officials Tell Mabus LPD-17 Variant Is Best Option For LX(R)," *Inside the Navy*, October 13, 2014; Lara Seligman, "Senior Leadership Get Decision Brief On LX(R); MOA Expected This Month," *Inside the Navy*, October 6, 2014; Lara Seligman, "Navy Moving Forward With 'Paper Review' Of LX(R) Amphibious Program," *Inside the Navy*, September 22, 2014; Lara Seligman, "Navy: LX(R) Will Either Be Modified LPD-17 Or 'Completely New' Design," *Inside the Navy*, August 18, 2014.

By starting with an existing ship design and avoiding the extensive engineering cost of beginning with a clean sheet, the Navy saved “enough cost that we were actually able to take that money... and reinvest it into the platform” in the form of additional capabilities today’s LSDs don’t have, such as command and control to support split and disaggregated operations.

Johnson said the program had to stay within a cost cap but said he was confident the first ship would stay within the cost cap and deliver on time.

Lt. Gen. Robert Walsh, who served as director of expeditionary warfare (OPNAV N95) until July, said at a Marine Corps Association event last month that, in fact, the Navy and Marine Corps had far surpassed cost-reduction goals while descoping the LPD design.

“We drove that to a cost cap that was given to us by [the chief of naval operations], and we, with our industry partners, with [Naval Sea Systems Command], drove in the right requirements. And we got the most we could possibly get out of that ship, and it almost looks like an LPD-17, and we got it well under the cost cap,” he said.

Current N95 Maj. Gen. Chris Owens said the approach is “attractive to [the Office of the Secretary of Defense] and it’s attractive on Capitol Hill” due to its efficiency. Ultimately, he said, it will “give us a bigger ship, greater capability, not only in size and capacity but also in things like aviation capability, the medical capability and perhaps most importantly in this day and age of split and disaggregated operations the command and control capability that the LSDs lack. And we can only do that because the LPD-17 program is a proven one.”¹⁵

Combined Solicitation Limited to Two Builders¹⁶

On June 25, 2015, the Navy, as part of its acquisition strategy for LX(R) program, issued a combined solicitation consisting of separate Requests for Proposals (RFPs) for the detailed design and construction (DD&C) of the first six ships in the TAO-205 class oiler program (previously known as the TAO[X] program),¹⁷ the detailed design and construction in FY2017 (and also procurement of long lead-time materials in FY2016) for an amphibious assault ship called LHA-8 that the Navy wants to procure in FY2017, and contract design support for the LX(R) program.¹⁸ The Navy has limited bidding in this combined solicitation to two bidders—Ingalls Shipbuilding of Huntington Ingalls Industries (HII/Ingalls) and National Steel and Shipbuilding Company of General Dynamics (GD/NASSCO)—on the grounds that these are the only two shipbuilders that have the capability to build both TAO-205s and LHA-8. Under the Navy’s plan for the combined solicitation, one of these two yards would be awarded the DD&C contract for the first six TAO-205s, the other yard would be awarded the DD&C contract (and procurement of long lead-time materials) for LHA-8, and the shipyard with the lowest combined evaluated price will receive a

¹⁵ Megan Eckstein, “Navy: LX(R) Will Be Cheaper, More Capable Thanks To Using San Antonio LPD Design As Starting Point,” *USNI News*, November 5, 2015.

¹⁶ Source for this section: Navy briefing for CRS and Congressional Budget Office (CBO), March 23, 2015.

¹⁷ The TAO-205 class program is a Navy program to procure a class of 17 new oilers. The first TAO-205 was procured in FY2016. For more on the TAO-205 class program, see CRS Report R43546, *Navy John Lewis (TAO-205) Class Oiler Shipbuilding Program: Background and Issues for Congress*, by Ronald O’Rourke .

¹⁸ Press reports describe it as a single RFP; see, for example, Sam LaGrone, “Navy Issues RFP for Oilers and LHA-8 to NASSCO, Ingalls,” *USNI News*, July 10, 2015; Valerie Insinna, “Navy Quietly Issues RFP for LHA-8, TAO(X),” *Defense Daily*, July 14, 2015: 2. Contract design work is intended to develop the design of a ship enough so that a contract can then be awarded for the detailed design of the ship.

higher profit on its DD&C contract¹⁹ and will be awarded the majority of the LX(R) contract design engineering man-hours.

Funding for a 12th LPD-17 Class Ship

Although the Navy, consistent with the previous 33-ship (11+11+11) amphibious ship force-level goal, had wanted the 11th LPD-17 class ship to be the final ship in the LPD-17 program, Congress has supported the procurement of a 12th LPD-17 class ship, which would be designated LPD-28. Congress provided \$263.3 million in unrequested advance procurement (AP) funding for a 12th LPD-17 class ship in FY2013 (this funding figure was later reduced to \$243.0 million by the sequester of March 1, 2013), and an additional \$1.0 billion in unrequested procurement funding for a 12th LPD-17 class ship in FY2015.

In response to Congress's FY2013 and FY2015 funding actions, the Navy, as a part of its FY2016 budget submission, has inserted a 12th LPD-17 class ship into its shipbuilding program, and is requesting \$550 million in FY2016 procurement funding to complete the ship's estimated procurement cost of \$1,793.0 million. This estimated procurement cost is \$286.2 million less than that of the 11th LPD-17 class ship, which was procured in FY2012 and has an estimated procurement cost of \$2,079.2 million. The Navy states that it plans to achieve the lower estimated cost of the 12th LPD-17 class ship by incorporating design innovations and cost-reduction strategies intended for the LX(R).²⁰ This will make LPD-28, to some degree, a transitional ship between the baseline LPD-17 design and the LX(R) design.

Issues for Congress

FY2016 Funding for LX(R) and LPD-17 Programs

One issue for Congress is whether to approve, reject, or modify the Navy's FY2016 requests for research and development funding for the LX(R) program and procurement funding for a 12th LPD-17 class ship. Potential matters to consider include whether the Navy has accurately estimated the procurement cost of the 12th LPD-17, which, as noted above, is to incorporate design innovations and cost-reduction strategies intended for the LX(R).

Total Number of LX(R) Ships

Another issue for Congress is whether, in response to the procurement of a 12th LPD-17 class ship, the LX(R) program should be reduced from 11 ships to 10 ships. A 12th LPD-17 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. As stated earlier (see "Amphibious Lift Goal" in "Background"), the Navy is referring to the 12th LPD-17 as a required 34th amphibious ship.

¹⁹ The Navy is planning to employ a Profit Related to Offer (PRO) contracting approach within this combined solicitation strategy to encourage competitive pricing by the shipyards. Under PRO bidding, both bidders are granted work, but the bidder with the lower price is given a high profit margin. PRO bidding has been used in other Navy shipbuilding programs, particularly the DDG-51 destroyer program, where it has been used since the 1990s.

²⁰ Lara Seligman, "Navy: To Stay Under \$1.8 Billion, LPD-28 Will Exploit LX(R) Development Efforts," *Inside the Navy*, February 16, 2015; and Megan Eckstein, "Marines Will Use LPD-28 to Begin Transitioning to LX(R) Ship Systems," *Defense Daily*, February 4, 2015: 3-4.

Navy's Proposal for Combined Solicitation Limited to Two Builders

A third issue for Congress is whether to approve, reject, or modify the Navy's proposal to use a combined solicitation consisting of separate Requests for Proposals (RFPs) for the detailed design and construction of the first six TAO-205 class oilers, the detailed design and construction of LHA-8, and contract design support for the LX(R) program, and to limit bidding in this combined solicitation to HII/Ingalls and GD/NASSCO. Potential matters to consider include the Navy's rationale for using the combined solicitation and the potential impact on various shipyards of the Navy's proposal to limit bidding to HII/Ingalls and GD/NASSCO.

At a March 18, 2015, hearing on Navy shipbuilding programs before the Seapower subcommittee of the Senate Armed Services subcommittee, the following exchange occurred:

SENATOR MAZIE K. HIRONO, RANKING MEMBER (continuing):

For you again, Mr. Secretary, the Navy announced the intention to complete a package of ship contracts including the TAO(X) oiler, the LHA(R)²¹ (ph)—I just love all these acronyms, amphibious assault ship and the LX(R) dock landing ship replacement, all in one package.

The Navy also said that it would restrict competition for that package or contract to only two shipyards. What is the Navy's strategy for awarding these contracts? And why is it in the taxpayers' best interest to restrict competition for these ships?

SEAN J. STACKLEY, ASSISTANT SECRETARY OF THE NAVY FOR RESEARCH, DEVELOPMENT, AND ACQUISITION:

Thanks for the question, Ma'am. We're trying to balance a couple of things. First, our requirements, so we have a requirement to replace our fleet oilers and that's the, that first of class ship for the TAO(X) as the replacement for our fleet oilers is in the [FY]2016 budget year.

We also have a requirement for a new big deck amphib, the LHA-8, which is a[n] [FY]2017 ship with advance procurement in [FY]2016. And we've talked about the LX(R), which is the replacement amphibious ship for our LSD 41 class, which we have in the budget in [FY]2020 with advance procurement the year prior.

So when we look ahead at those three major programs across our industrial base, a couple of things become immediately apparent. First, we talked about the fragility of the industrial base, what we want to do is add stability to the industrial base.

Second, we've talked about affordability of our shipbuilding programs, so what we want to do is figure out how to drive affordability into those programs to the extent possible. And then third is competition, which couples the industrial base in the element of affordability.

The strategy that we had put forward does a couple of things. First, it sends—it sends a signal to our industrial base, so we're going to limit competition to the two shipbuilders that we believe are absolutely essential to our industrial base.

HIRONO:

By the way, what are the two shipbuilders?

STACKLEY:

²¹ LHA(R) means LHA replacement; it is an alternative term for the Navy's new LHA-type ships, including LHA-8.

Ingalls Shipbuilding and ...

HIRONO:

In Mississippi.

STACKLEY:

In Mississippi. And NASSCO in San Diego. Today, Ingalls builds four different ship classes. Today, NASSCO builds one Navy ship class in commercial work. We view them, both critical to our industrial base.

And if we were to go down a path of open competition, and soliciting these one at a time, there is tremendous uncertainty in terms of what the outcome would be in terms of our industrial base and our—the affordability of those programs.

So what we've—what we've elected to do is—one, limit the competition to those two builders. Two, we're soliciting each of these programs separately but together and requiring bids on each from both shipbuilders, so that we can get competition inside of each as opposed to either allocating or awarding one at a time which puts one of the shipbuilders at risk.

So in order to preserve the industrial base, leverage competition, bring affordability and stability to that industrial base, we've elected to limit the competition, go out with a single solicitation that contains both the LHA-8 and the TAO(X).

Size them what we believe to be about the same in terms of man hours of work and also about the same in terms of horizon of time, so that the industry has some surety that, “OK, we understand how much work is coming our way. We can build that in our business base.” We're sharpening our pencils in terms of competition.²²

A March 23, 2015, press report states:

Decisions are looming on two major new US Navy shipbuilding programs, and while the service wants to get the best deal for the ships, it's also concerned about preserving its industrial base.

To that end, acquisition chief Sean Stackley is structuring the competition to build the new T-AO(X) fleet oiler and LHA 8 amphibious assault ship so that San Diego-based General Dynamics National Steel and Shipbuilding Co. (NASSCO) and the Huntington Ingalls Industries' yard in Mississippi—each of which plan to bid for the ships—both get enough work to remain viable.

The ships “are key to our core structure. And they're also key to our industrial base,” Stackley said March 18 in an interview. “So when we try to balance requirements and affordability in the industrial base, a couple of things come to mind. First and foremost is, we have two major builders for these types of ships, Ingalls and NASSCO. And each of them are in a position where they have to win one of the programs. However, if we go down the path of competing them one at a time, it's easy to envision a scenario where either one of them sweeps the table.”

A decision on the T-AO(X) is expected in 2016, with the LHA 8 to come in 2017. Stackley noted that the yard that does not win the oiler “will be in a very difficult position to compete head-to-head for the next program, the LHA 8, because of the imbalance of workload that was just created between the two. So to keep them head-to-head in terms of competitiveness, we have determined that first, we're going to limit the competition to those two shipyards, because each needs to win one of those first two contracts” to remain viable.

²² Transcript of hearing.

In return for limiting the competition to Ingalls and NASSCO, Stackley said, “we are going to require that they both bid on both programs, with a commitment that each of them will win one of the contracts, as long as their bids are responsible.”

That approach, he said, “gives us the stability we're looking for in the industrial base. It gives us the advantages of competition across the programs.”...

To many observers, it appears as if the Navy’s bidding strategy concedes that Ingalls will win the assault ship and NASSCO the oiler.

“No. There’s no predetermination whatsoever here,” Stackley insisted. “We've determined that both shipyards are capable of building both ship classes—and we spent a lot of time doing that evaluation before we went forward with this acquisition strategy. We've also sized, as best as we reasonably can, the awards so they're about equal in terms of the amount of work going into the winner of each of these—six T-AO(X)s on one hand and LHA 8 on the other. We think that, in terms of the shipyards’ capabilities and in terms of the size and shape of the workload, we've got parity here for a very healthy competition.”

Accelerating Procurement Date for First LX(R)

Another issue for Congress is whether to accelerate the procurement of the first LX(R) from FY2020 to an earlier year. As noted earlier, the Navy’s FY2012, FY2013, and FY2014 budget submissions scheduled the procurement of the first LX(R) in FY2017, FY2018, and FY2019, respectively.

Supporters of accelerating the procurement of the first LX(R) to an earlier year could argue that it would restore the procurement date shown in an earlier Navy budget submission, and that it would close the gap between the end of LPD-17 procurement and the start of LX(R) procurement, which would increase production learning curve benefits in shifting from LPD-17 production to LX(R) production, should HII/Ingalls be selected as the builder of the first LX(R). They could also argue that it would move funding requirements for the first LX(R) away from those of the first Ohio replacement (SSBN[X]) ballistic missile submarine, which is scheduled to be procured in FY2021.²³

Opponents of accelerating the procurement of the first LX(R) to an earlier year could argue that the builder of the first LX(R) has not yet been selected, making the production learning curve benefits of bringing the start of LX(R) procurement close to the end of LPD-17 procurement uncertain. They could also argue that it would add a funding requirement to the Navy’s budget in a year prior to FY2020, potentially making it harder for the Navy to fund other programs in that earlier year, and that procuring the ship prior to FY2020 would be ahead of need (i.e., earlier than needed to replace the first retiring LSD-41/49 class ship).

²³ Observers are concerned about the pressure that the Ohio replacement program might place on the Navy’s ability to fund other shipbuilding programs. For a discussion, see CRS Report R41129, *Navy Ohio Replacement (SSBN[X]) Ballistic Missile Submarine Program: Background and Issues for Congress*, by Ronald O'Rourke.

Legislative Activity for FY2016

FY2016 Budget

The Navy's proposed FY2016 budget was submitted to Congress on February 2, 2015. As shown in **Table 1**, the budget requested \$46.5 million in research and development funding for the LX(R) program. The funding was requested in Program Element (PE) 0604454N, entitled LX(R), which is line 79 in the Navy's FY2016 research and development account. The Navy's proposed FY2016 budget also requested \$550.0 million in the Navy's shipbuilding account to complete the procurement cost of a 12th LPD-17 class ship.

FY2016 National Defense Authorization Act (H.R. 1735/S. 1376)

House

The House Armed Services Committee, in its report (H.Rept. 114-102 of May 5, 2015) on H.R. 1735, recommends increasing by \$29 million the Navy's FY2016 request for research and development funding for the LX(R) program, with the increase being for "LX(R) Acceleration" (page 463, line 079), adding \$250 million in unrequested FY2016 advance procurement (AP) funding for the LX(R) program, with the funding being for "LX(R) Acceleration" (page 422, line 014A), and approving the Navy's FY2016 procurement funding request for the 12th LPD-17 (page 422, line 012).

H.Rept. 114-102 states:

Amphibious ship construction

The budget request contained no funds for advance procurement associated with the replacement amphibious warship (LX(R)).

The committee notes that the Secretary of the Navy, the Chief of Naval Operations, and the Commandant of the Marine Corps have agreed to support the LX(R) as a derivative of the LPD 17 San Antonio-class hull form. The committee also notes that the fiscal year 2016 budget submission from the Department of the Navy continues investment in the nation's amphibious warship fleet with the completion costs anticipated for LPD 28. The committee supports the Navy's initiative to use an existing hull form and commends the Navy on efforts to decrease costs and reduce schedule. However, the committee is concerned that the Navy shipbuilding plan does not take advantage of the efficiencies and subsequent cost avoidance inherent in maintaining an active industrial base for construction of vessels utilizing the LPD 17 hull form. The committee believes that the optimum construction start for the LX(R) class of vessels is in fiscal year 2018 rather than the current Navy program of record of fiscal year 2020.

Therefore, the committee recommends \$250.0 million in advance procurement for amphibious vessels in Shipbuilding and Conversion, Navy, for investment in engineering design and planning, and long lead time equipment including propulsion, steering and electrical generating equipment, air conditioning plants, castings, and other items necessary to move construction start of the first LX(R) vessel to fiscal year 2018. (page 28)

Senate

The Senate Armed Services Committee, in its report (S.Rept. 114-49 of May 19, 2015) on S. 1376, recommends increasing by \$29 million the Navy's FY2016 request for research and

development funding for the LX(R) program, with the increase being for “Accelerate LX(R)” (page 406, line 79), adding \$51 million in unrequested FY2016 advance procurement (AP) funding for the LX(R) program, with the funding being for “Accelerate LX(R)” (page 363, line XX), and approving the Navy’s FY2016 procurement funding request for the 12th LPD-17 (page 363, line 12).

S.Rept. 114-49 states:

LX(R)

The budget request included no funding in Shipbuilding and Conversion, Navy for advance procurement of LX(R), which is expected to functionally replace LSD-41 and LSD-49 class ships. The committee notes accelerating the delivery of LX(R) class ships to the fleet will enable the Navy to meet a greater amount of combatant commander demand for amphibious warships. As a result, the committee recommends an increase of \$51.0 million in advance procurement for this program. (Page 25)

S.Rept. 114-49 also states:

LX(R)

The budget request included \$46.5 million in PE 64454N for research, development, test, and evaluation of LX(R), which is expected to functionally replace LSD-41 and LSD-49 class ships. The committee notes accelerating the delivery of LX(R) class ships to the fleet will enable the Navy to meet a greater amount of combatant commander demand for amphibious warships. As a result, the committee recommends an increase of \$29.0 million for this program. (Page 59)

S.Rept. 114-49 also states:

***San Antonio*-Class Amphibious Transport Dock program**

The committee recognizes final requirements are still under development for the San Antonio-class amphibious transport dock ship designated LPD-28 and expects the fiscal year 2017 budget request to fully fund LPD-28 in the future years defense program. (Page 40)

Conference (Version Vetoed)

The conference report (H.Rept. 114-270 of September 29, 2015) on H.R. 1735 (which was agreed to by the House and Senate on October 1 and 7, 2015, respectively, and vetoed by the President on October 22, 2015), recommends increasing by \$29 million the Navy’s FY2016 request for research and development funding for the LX(R) program, with the increase being for “LX(R) Acceleration” (page 953, line 079), adding \$250 million in unrequested FY2016 advance procurement (AP) funding for the LX(R) program, with the funding being for “LX(R) Acceleration” (page 911, line 014A), and approving the Navy’s FY2016 procurement funding request for the 12th LPD-17 (page 911, line 12).

FY2016 DOD Appropriations Act (H.R. 2685/S. 1558/H.R. 2029)

House

The House Appropriations Committee, in its report (H.Rept. 114-139 of June 5, 2015) on H.R. 2685, recommends reducing by \$5.635 million the Navy’s FY2016 request for research and development funding for the LX(R) program, with the reduction being for “Program execution” (page 236, line 79). The report recommends approving the Navy’s FY2016 request for procurement funding for the LPD-17 program (page 160).

Senate

The Senate Appropriations Committee, in its report (S.Rept. 114-63 of June 11, 2015) on S. 1558, recommends increasing by \$29 million the Navy's FY2016 request for research and development funding for the LX(R) program, with the increase being for "Adjustment [sic: Authorization] adjustment: Accelerate LX(R)" (page 163, line 79). The report recommends adding \$250 million in FY2016 procurement funding for the LX(R) program (the Navy had requested no FY2016 procurement funding for the LX(R) program), with the increase being for "Program increase: Funding to support authorization proposal to accelerate delivery of LX(R) class ships" (page 100, line 15), and approving the Navy's FY2016 request for procurement funding for the LPD-17 program (page 98, line 12).

S.Rept. 114-63 states:

Amphibious Warship Construction.—The Committee commends the Navy for including \$550,000,000 in the fiscal year 2016 budget request to build a 12th LPD-17 San Antonio-class amphibious ship. This additional ship will help reduce the level of risk being assumed with amphibious lift capability. As noted in previous Senate reports, the Navy and Marine Corps have agreed on a fiscally constrained minimum force of 33 ships to meet a 38 amphibious warship force requirement. This additional ship also provides continued stability and cost savings opportunities to the shipbuilding industrial base.

The Committee was also pleased when the Secretary of the Navy, the Chief of Naval Operations, and the Commandant of the Marine Corps agreed to support the LSD amphibious warship replacement program, known as LX(R), with a derivative of the LPD-17 San Antonio-class hull form. As detailed in the report accompanying the Senate version of the fiscal year 2010 Department of Defense Appropriations Bill (Senate Report 111-74), the Committee supports the use of common hull forms as a way to control ship costs and maintain production schedules. The use of an existing or common hull form for the LX(R) program will improve the Navy's ability to deliver on a program that builds ships on time and on budget.

While the Committee was pleased with the Navy's LX(R) hull form decision, it was disappointed the budget request contained no advance procurement funds for the program. The Committee believes the Navy's current LX(R) build plan does not take advantage of the efficiencies and subsequent cost avoidance inherent in maintaining an active industrial base for construction of vessels utilizing the LPD-17 hull form. As a result, the Committee does not support the Navy's current program of record construction start date of fiscal year 2020 and believes the optimum construction start for LX(R) class vessels is as early as fiscal year 2018. Therefore, the Committee recommends \$250,000,000 in advance procurement funding for investment in engineering design and planning, and long lead time equipment including propulsion, steering and electrical generating equipment, air conditioning plants, castings, and other items necessary to accelerate construction start of the first LX(R) vessel.

Finally, consistent with S. 1376, the National Defense Authorization Act for Fiscal Year 2016, as reported, the Committee recommends an additional \$199,000,000 in advance procurement funding for the LHA amphibious assault warship replacement program. As noted in the report accompanying S. 1376, these additional funds would expedite delivery of LHA 8 enabling the Navy to reach the force structure assessment objective of 11 large deck amphibious ships as early as fiscal year 2023. (Pages 101-102)

Conference

The FY2016 DOD appropriations act is Division C of H.R. 2029, the Consolidated Appropriations Act, 2016. The explanatory statement for Division C of H.R. 2029 increases by

\$29 million the Navy’s FY2016 request for research and development funding for the LX(R) program, with the increase being for “Accelerate LX(R).” (PDF page 239 of 360, line 79). The explanatory statement adds \$250 million in FY2016 advance procurement (AP) funding for the LX(R) program (the Navy had requested no FY2016 procurement or AP funding for the LX(R) program), with the increase being for “Program increase—program acceleration” (PDF page 162 of 360, line 15), and approves the Navy’s FY2016 request for procurement funding for the LPD-17 program (PDF page 160 of 360, line 12).

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