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Navy Littoral Combat Ship (LCS): Background and Issues for Congress

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Summary

The Littoral Combat Ship (LCS) is to be a small, fast Navy surface combatant with modular weapon systems. Two industry teams are developing separate designs for the LCS. For FY2006, the Navy has requested $613.3 million for the program, including $240.5 million in research and development funding to build the second LCS, $336.0 million in additional research and development funding, and $36.8 million in procurement funding for LCS mission modules. The Navy may want to build 63 to 82 LCSs. A 63- to 82-ship program might have a total acquisition cost of about $25.3 billion to $32.7 billion. The LCS program raises several issues for Congress. For a longer discussion of the LCS program, see CRS Report RL32109.[1] This report will be updated as events warrant.

Background

The LCS program was announced by the Navy in November 2001 as part of a proposed family of next-generation Navy surface combatants that also includes the much-larger DD(X) destroyer and CG(X) cruiser.[2] The LCS is to be a small, fast surface combatant that would use modular "plug-and-fight" mission payload packages, including unmanned vehicles (UVs). The primary intended missions of the LCS are countering enemy mines, submarines, and fast attack craft (i.e., "swarm boats") in heavily contested littoral (near-shore) waters. Secondary LCS missions, also to be performed in littoral waters, include intelligence, surveillance, and reconnaissance (ISR); maritime intercept; special operations forces (SOF) support; and logistics support for movement of personnel and supplies. Some observers believe the LCS might also be suitable for homeland defense operations.

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[1] CRS Report RL32109, *Navy DD(X) and LCS Ship Acquisition Programs: Oversight Issues and Options for Congress*, by Ronald O'Rourke.

[2] For more on the DD(X) and CG(X), see CRS Report RL32109, op. cit., and CRS Report RS21305, *Navy DD(X) Destroyer Program: Background and Issues for Congress*, by Ronald O'Rourke.

A March 2005 Navy report to Congress on potential future Navy force levels showed potential 260- and 325-ship fleets for FY2035 that include 63 and 82 LCSs, respectively.[3] Admiral Vernon Clark, the Chief of Naval Operations, has spoken of building 75 to 100.[4] In addition to the first LCS, which was procured in FY2005, the FY2006-FY2011 FYDP calls for procuring the second LCS in FY2006, another two in FY2007, three more in FY2008, and five per year in FY2009-FY2011.

On May 27, 2004, the Navy awarded contracts to teams led Lockheed Martin and General Dynamics (GD) for final system design of two versions of the LCS, with options for detailed design and construction of up to two LCSs each. The Lockheed team is to build the first LCS, while the GD team is to build the second. The Navy wants to build a few LCSs to the two designs before deciding whether to continue building one design, the other, or both. The Navy has also left open the possibility of building follow-on LCSs to additional designs from submitted by other firms. Lockheed plans to build its LCSs at Marinette Marine of Marinette, WI, and Bollinger Shipyards of Louisiana and Texas; GD plans to build its LCSs at Austal USA of Mobile, AL. These yards are not among the six yards that have built the Navy's major warships in recent years.

The Navy wants to procure the first and second LCSs through the Navy's research and development account rather than the Navy's ship-procurement account. The Navy wants to procure LCS mission modules through the Other Procurement, Navy (OPN) account rather than the Navy's ship-procurement account. **Table 1** on the next page shows funding for the LCS program through FY2011. The Navy wants LCSs to have a unit procurement cost of no more than $220 million, exclusive of their mission modules. Figures from **Table 1** for FY2009-FY2011 (when steady-state production of five ships per year is programmed) suggest that when the cost of mission modules is added in, the LCS program might have an average ship procurement cost of about $387 million, and that a program of 63 to 82 LCSs might therefore have a total acquisition (i.e., research and development plus procurement) cost of about $25.3 billion to $32.7 billion.

The conference report (H.Rept. 108-622 of July 20, 2004) on the FY2005 defense appropriations bill (H.R. 4613/P.L. 108-287 of August 5, 2004) approved the Navy's plan to build the first two LCSs using research and development funds rather than shipbuilding funds, funded the first LCS's construction cost, required the second LCS to be built to the second LCS design now being developed, prohibited the Navy from requesting funds in FY2006 to build a third LCS, and required all LCSs built after the lead ships of each design to be funded in the Navy's shipbuilding account rather than its research and development account.

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[3] U.S. Department of the Navy, *An Interim Report to Congress on Annual Long-Range Plan For The Construction Of Naval Vessels For FY 2006*. The report was delivered to the House and Senate Armed Services Committees on March 23, 2005. Copies of the report were obtained by defense trade publications and at least one of these publications posted the report on its website.

[4] Dave Ahearn, "CNO Clark Sees LCS Fleet Of 75-100 Ships," *Defense Today*, June 3, 2005: 1-3.

Table 1. LCS Program Funding, FY2002-FY2009
(millions of then-year dollars; totals may not add due to rounding)

	03	04	05	06	07	08	09	10	11	Total thru FY11
Research, Development, Test & Evaluation, Navy (RDT&EN) account										
Ship 1 construction	0	0	212.5	0	0	0	0	0	0	212.5
Ship 2 construction	0	0	0	240.5	0	0	0	0	0	240.5
Procurement of ship long-lead items	0	0	16.0	0	0	0	0	0	0	16.0
Ships 1and 2 outfitting/post delivery	0	0	0	8.7	36.7	36.7	7.1	0	0	89.2
LCS ship development	35.3	158.3	224.2	117.3	130.8	57.7	37.1	37.9	16.4	815.0
LCS mission package project	0	0	0	209.9	131.6	65.3	57.1	80.6	34.3	578.8
Subtotal RDT&EN	35.3	158.3	452.6	576.5	299.2	159.8	101.3	118.4	50.6	1952.0
Shipbuilding and Conversion, Navy (SCN) account										
Ships 3-22, *(qty)*	0	0	0	0	542.4 *(2)*	779.7 *(3)*	1127.2 *(5)*	1112.3 *(5)*	1110.3 *(5)*	4671.9 *(20)*
Subtotal SCN	0	0	0	0	542.4	779.7	1127.2	1112.3	1110.3	4671.9
Other Procurement, Navy (OPN) account (for LCS mission modules)										
Subtotal OPN	0	0	0	36.8	108.4	221.5	748.8	738.7	813.7	2667.9
Weapons Procurement, Navy (WPN) account										
Subtotal WPN	0	0	0	0	0	0	48.3	48.4	59.3	156.0
TOTAL	35.3	158.3	452.6	613.3	950.0	1161.0	2025.6	2017.8	2033.9	9447.8

Source: Navy FY2006 budget justification books.

Issues for Congress

Force Structure Justification for Program. Although the March 2005 Navy report sets forth notional Navy fleets in FY2035 of 260 and 325 ships, including 63 and 82 LCSs, respectively, the status of these two fleet plans as official DOD force-structure goals is uncertain. Supporters of the LCS program could argue that a force-structure plan for the Navy with slots for 63 to 82 LCSs will eventually be approved. Critics could argue that, until such a plan is approved, the Navy has no approved force-structure basis for proposing a program to build any significant number of LCSs.

Analytical Basis For Program. Prior to announcing the LCS program in November 2001, the Navy apparently did not conduct a formal analysis to demonstrate that a ship like the LCS would be more cost-effective than potential alternative approaches for performing the LCS's stated missions. Potential alternative approaches include (1) manned aircraft, (2) submarines equipped with UVs, (3) a larger surface combatant equipped with UVs and operating further offshore, (4) a non-combat littoral support craft (LSC) equipped with UVs, or (5) some combination. The absence of a formal cost effectiveness analysis supporting the LCS as the best or most promising approach raises a question regarding the analytical basis for the program.

Supporters argue that the LCS builds on about four years of analytical work on small, fast surface combatants done at the Naval War College, responds to the Navy's need for forces that can operate in littoral waters against enemy anti-access and area-denial forces, and is consistent with the network-centric warfare, the growing importance of UVs, and the need for more affordable Navy ships. They can also argue that the Navy in the past has built prototype ships without having first done a formal cost effectiveness study. Critics could argue that these arguments may be true but do not demonstrate that the LCS is the best or most promising approach for performing the LCS's stated missions. Absent a formal study, they could argue, the Navy has not, for example, shown why it would be necessary or preferable to send a small and potentially vulnerable manned ship into heavily defended littoral waters to deploy helicopters or UVs when helicopters or UVs could also be launched from larger ships operating further offshore or (in the case of UVs) from aircraft. The Administration, LCS critics could argue, is being proposed on the basis of "analysis by assertion." They can argue that while it may be acceptable to build one or a few ships as operational prototypes without first having analytically validated the cost-effectiveness of the effort, it is quite another thing to propose a potentially 63- to 82-ship program costing billions of dollars without first examining through rigorous analysis whether this would be the most cost-effective approach.

Potential Homeland Defense Mission. As mentioned earlier, some observers believe the LCS might also be suitable for homeland defense operations. Making this an additional mission for the LCS could lead to an increase in the total planned LCS procurement quantity. The Coast Guard, however, could also conduct such operations, and is currently procuring new cutters and aircraft under its Deepwater acquisition program to improve its ability to conduct these and other operations in the future.[5] Supporters of adding homeland defense as a mission for the LCS could argue that many of the features that make the LCS suitable for Navy operations in littoral waters overseas could make it suitable for homeland defense operations in littoral waters close to the United States. Skeptics could argue that the Coast Guard's new Deepwater cutters and aircraft may be more cost effective than the LCS for conducting these operations, and that a more rigorous examination of potential Navy and Coast Guard methods for performing such operations should be conducted before adding homeland defense as a mission for the LCS and possibly increasing the size (and cost) of the LCS program.

Program Cost. Navy officials acknowledge that the total number of LCSs, the cost of individual LCS mission modules, and the ratio of mission modules to LCSs, is not yet clear, and that the potential total procurement cost of the LCS program, including mission modules, is therefore uncertain. Supporters could argue that total program cost will become clearer as the Navy works through the details of the program. Critics could argue that a major acquisition program like the LCS program should not be initiated until its potential total costs are better understood.

Rapid Acquisition Schedule. The Navy's plan called for Congress to approve the start of LCS construction in 2004, less than three years after the LCS program was first announced. Supporters of this rapid schedule could argue that it responded to an urgent Navy need for improved littoral warfighting capability and is consistent with defense

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[5] For more on the Deepwater program, see CRS Report RS21019, *Coast Guard Deepwater Program: Background and Issues for Congress*, by Ronald O'Rourke.

acquisition streamlining and reform. Skeptics could argue that it is not clear, based on recent Navy combat operations in Kosovo, Afghanistan, and Iraq, whether the need for the LCS is urgent, and that the Navy's rapid acquisition strategy may be motivated more by other considerations, such as getting the LCS program started before there is a change in the Administration, or before there is a change in Navy leadership, or before supporters of the DD(X) destroyer possibly try to end the LCS program, or before Congress fully understands the details of the LCS program. Skeptics could argue that allowing LCS program to proceed could provide DOD with a precedent to begin other major acquisition programs in a similar rapid manner, which might reduce Congress' ability to conduct effective oversight of proposed DOD procurement programs.

Funding Strategy for Mission Modules. **Table 1** suggests that the Navy's plan to procure LCS mission modules in the Other Procurement, Navy (OPN) account may result in 35% to 40% of the LCS program's total procurement costs being funded through this account. Supporters of this plan could argue that procuring LCS mission modules in the OPN account is consistent with the practice of procuring ship weapons (e.g., missiles and gun shells) through the Weapon Procurement, Navy (WPN) appropriation account or the Procurement of Ammunition, Navy and Marine Corps (PANMC) appropriation. Skeptics could argue that the LCS mission modules are not missiles and gun shells, but rather elements of the ships' combat systems, and that funding the modules through the OPN account rather than the ship-procurement account would effectively obscure a significant portion of total LCS program procurement costs by placing it in a part of the Navy's budget that is less visible to Congress.

Industrial Base. Supporters of the current plan to build LCSs in yards other than the two current surface combatant builders — General Dynamics' Bath Iron Works (BIW) and Northrop Grumman's Ship Systems (NGSS) division — could argue that this will help constrain LCS construction costs because the yards in question have lower overhead costs than BIW or NGSS. Skeptics could argue that BIW and NGSS have considerable unused building capacity, that building LCSs at BIW or NGSS could reduce the cost of other Navy shipbuilding programs being performed at these yards by spreading BIW's or NGSS' fixed overhead costs over a larger amount of shipbuilding work, and that building LCSs at yards other than those that already build major ships for the Navy will create one or more additional shipyards with a strong dependence on Navy shipbuilding contracts and thereby exacerbate the current excess-capacity situation in Navy shipbuilding.

Potential Options for Congress. Potential options for Congress for the LCS program include the following:

- shift procurement of LCS mission modules to the Navy's ship-procurement account to make these costs more visible to Congress;
- procure a few LCSs and then evaluate them in exercises before deciding whether to put the LCS into larger-scale series production;[6]

[6] This option would also provide time to confirm the emergence of projected littoral threats and an opportunity to conduct an Analysis of Multiple Concepts that would not be tainted by a Navy commitment to putting the LCS in larger-scale production. For a discussion of this option see Robert O. Work, *Naval Transformation and the Littoral Combat Ship*, Center for Strategic and Budgetary Assessments, Feb. 2004.

- procure LCSs at a rate of up to 10 per year to get LCSs into the fleet sooner and achieve better production economies of scale;
- procure LCSs at a rate of less than 5 per year so as to reduce annual LCS funding requirements;
- terminate the LCS program (and the DD(X) program) and instead procure a new-design frigate as a common replacement;[7] and
- terminate the LCS program and invest more in other littoral-warfare improvements.

Legislative Activity for FY2006

FY2006 Defense Authorization Bill (H.R. 1815/S. 1042). H.R. 1815 as reported by the **House Armed Services Committee** (H.Rept. 109-89 of May 20, 2005) contains a provision (Section 124) that limits the procurement cost of each LCS, including its mission modules, to $400 million. The report recommends increasing the LCS program's research and development funding request by $12 million to fund work on high-strength composite material (page 165). The **Senate Armed Services Committee**, in its report on S. 1042 (S.Rept. 109-69 of May 17, 2005), expresses concern for the Navy's plan to limit competition for future Flight 1 LCSs to the two LCS designs being developed, and directs the Navy to report on its acquisition strategy for Flight 1 LCSs (page 110). The report recommends increasing the LCS program's FY2006 procurement funding request by $8.6 million for a spare marine gas turbine engine (pages 72-73) and approving the program's research and development funding request (page 156).

FY2006 Defense Appropriations Bill (H.R. 2863). The **House Appropriations Committee**, in its report (H.Rept. 109-119 of June 10, 2005), recommends approving the program's research and development funding request (page 251), which includes funds for building the second LCS, and adding $440 million in the SCN account for the procurement of two additional LCSs, for a total FY2006 procurement of three LCSs (page 146). The report stated:

> The Committee remains very supportive of the LCS program, and believes that further procurement in fiscal year 2006 is prudent and reasonable given the status of the program at this point in time. The Committee directs that, prior to obligation of SCN funds for the third and fourth ''flight zero'' LCS ships, the Navy certify in writing to the congressional defense committees that the ship designs from each prime contractor are sufficiently stable to allow further construction. The Committee also believes that, while the LCS ship itself is of stable and mature design, the mission modules essential to LCS warfighting capabilities are less mature. A number of these technologies have not been demonstrated in an operational environment, and cost estimates for the mission modules appear immature as well. To address this issue, the Committee directs the Navy to submit, not later than February 1, 2006, a report on the development and procurement plan for LCS mission modules, including a description of the development status of each subsystem. (Page 146)

[7] For a discussion of this option, see U.S. Congressional Budget Office, *Transforming the Navy's Surface Combatant Force*, Mar. 2003, pp. 4-17.