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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 FY2005, the Navy requested $107.7 million in research and development funding to begin building the first LCS. 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 ship using research and development funds rather than shipbuilding funds, funded the ship's entire construction cost ($214.7 million), required the second LCS (to be funded in FY2006) 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. 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 a future 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 (sometimes called "swarm boats") in heavily contested littoral (near-shore) waters. Secondary LCS missions, also to be performed in littoral waters, include intelligence, surveillance, and reconnaissance

[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.

(ISR); homeland defense/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. Each LCS would have a core crew size of 15 to 50 people, plus additional personnel for operating embarked mission modules.

The Navy has stated that it wants to procure a total of 30 to 60 LCSs. The FY2005-FY2009 Future Years Defense Plan (FYDP) submitted to Congress in February 2004 called for procuring the first LCS in FY2005, another two in FY2006, one more in FY2007, and three more in FY2008, and six more in FY2009. A long-range shipbuilding plan that the Navy submitted to Congress in May 2003 showed the remaining ships in the program being procured in FY2010 and future years at a rate of five ships per year.

The Navy wants the first LCS to cost between $150 million and $220 million in then-year dollars, exclusive of any mission modules, and wants follow-on LCSs to cost no more than $250 million in then-year dollars, including a representative payload package. Navy budget figures (see **Table 1** on the next page) suggest that individual mission modules to be procured during the FYDP would cost an average of $82 million each. Using the $250-million figure for an LCS with a representative payload, the total procurement cost for a fleet of 30 to 60 LCSs might be $7.5 billion to $15 billion, not including at least $1.4 billion in general research and development costs for the program.

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.

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. Under the Navy's plan, the Lockheed team would build the first LCS, while the GD team would build the second. **Table 1** on the next page shows funding for the LCS program through FY2009.

Issues for Congress

Force Structure Justification for Program. The last officially approved Navy force-structure plan — the 310-ship plan from the 2001 Quadrennial Defense Review — contains no slots for LCSs. While the Navy's subsequent proposal for a fleet of 375-ships contains slots for 50 to 60 LCSs, this proposal was not approved by the Secretary of Defense as an official planning goal, and Navy officials have since backed away from it. The Navy at this juncture thus appears to be without an officially approved force-structure plan that includes slots for any significant number of LCSs. LCS supporters could argue that a plan for the Navy with slots for 30 to 60 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.

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

	2002	2003	2004	2005	2006	2007	2008	2009	Total thru 2009
Research, Development, Test & Evaluation, Navy (RDT&EN) account									
Ship 1 construction	—	—	—	107.7	107.8	—	—	—	215.5*
Ship 2 construction	—	—	—	—	106.7	107.0	—	—	213.7*
All other**	—	35.3	166.2	244.4	288.4	285.9	130.5	207.5	1358.3
Subtotal RDTEN	0	35.3	166.2	352.1	502.9	392.9	130.5	207.5	1787.5
Shipbuilding and Conversion, Navy (SCN) account									
Ship 3	—	—	—	—	219.7	—	—	—	219.7
Ship 4	—	—	—	—	—	220.0	—	—	220.0
Ships 5, 6, 7***	—	—	—	—	—	—	625.7	—	625.7
Ships 8 thru 13***	—	—	—	—	—	—	—	1303.6	1303.6
Subtotal SCN	0	0	0	0	219.7	220.0	625.7	1303.6	2369.0
Other Procurement, Navy (OPN) account for procurement of LCS mission modules									
(Qty of modules)	—	—	—	—	(2)	(2)	(4)	(15)	(23)
Funding	0	0	0	0	180.0	180.0	351.3	1171.3	1882.6
TOTAL	0	35.3	166.2	352.1	902.6	792.9	1107.5	2682.4	6039.1

Source: Navy data provided to CRS by Navy Office of Legislative Affairs, February 20 and 27, 2004.
* Cost figures for each ship include detailed design/nonrecurring engineering (DD/NRE) costs for that ship.
** Funding for all program RDT&E other than for construction of Ships 1 and 2.
*** Three ships funded in FY2008 at total cost of $625.7 million; six ships funded in FY2009 at total cost of $1,303.6 million.

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 concept of 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 UVs when UVs could also be launched from aircraft or from larger ships operating further offshore. 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 30- to 60-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.[3] 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 unknown. 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. As shown in **Table 1**, the first 13 LCSs would cost an average of $215 million each, and the first 23 mission modules would cost an average of $82 million each. Using these figures, the combined average cost for an LCS equipped with a single mission module would be $297 million, which is 19% more than the Navy's $250-million target cost for an LCS with a representative payload package. Navy officials, moreover, have spoken about equipping each LCS with more than one mission module. Achieving the Navy's $250-million cost goal may therefore require reducing average procurement costs for LCSs, mission modules, or both, after FY2009.

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 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

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

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 also argue that allowing LCS program to proceed as planned 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. Supporters of the Navy's plan to procure LCS mission modules through the OPN account can argue that it is consistent with the traditional 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 account rather than the ship-procurement account. Skeptics could argue that the LCS mission modules are not missiles and gun shells, and that funding the modules through the OPN account would effectively obscure a significant portion of the total LCS program acquisition cost by placing them in a part of the Navy's budget where they might be less visible to Congress.

Industrial Base. Supporters of the current plan to build LCSs in a yard or 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;
- procure a few LCSs and then evaluate them in exercises before deciding whether to put the LCS into larger-scale series production;[4]
- 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;

[4] 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.

- terminate the LCS program (and the DD(X) program) and instead procure a new-design frigate as a common replacement;[5] and
- terminate the LCS program and invest more in other littoral-warfare improvements.

Legislative Activity for FY2005

For detailed information on the LCS program in the FY2005 defense authorization bill (H.R. 4200/S. 2400), see the Legislative Activity section of CRS Report RL32109. The conference report (H.Rept. 108-622 of July 20, 2004) on the FY2005 defense appropriations bill (H.R. 4613) includes a provision (Section 8092) that provides $214.7 million in the Navy's research and development account for construction of the lead LCS. The provision also states: "None of the funds provided in this act may be obligated to prepare a FY2006 budget request for a third vessel under the Littoral Combat Ship program in FY2006: Provided, That funds for the second vessel shall be for a second source supplier: Provided further, That all subsequent ships shall be purchased with 'Shipbuilding and Conversion, Navy' funds beginning in FY2007." The conference report stated:

> The conferees agree to provide $457,089,000 for the Littoral Combat Ship (LCS) program instead of $409,089,000 as proposed by the House and $352,089,000 as requested and proposed by the Senate. The conferees agree with the Senate that all follow-on ships, beyond one of each prototype design, should be fully funded in the Shipbuilding and Conversion, Navy appropriation. The conferees also agree that substantial testing of the LCS and associated mission modules is required to evaluate each ship design and validate operational requirements. Therefore, the conferees direct that no funds shall be obligated to prepare a fiscal year 2006 budget request for construction of a third vessel, as reflected in the conference agreement including Section 8092 as originally proposed by the Senate. This directive is intended to provide for a "gap" year between construction of the prototype ships and the follow-on construction of a second ship of each design, thereby ensuring that design problems discovered during the prototype phase of each ship design are identified and corrected before construction of follow-on ships. The conferees also agree with the Senate that beginning in the fiscal year 2006 budget request, the Navy should identify LCS mission module funding separately within the Research, Development, Test and Evaluation, Navy and Other Procurement, Navy appropriations. (Pages 310-311)

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