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Navy CVN-21 Aircraft Carrier Program: Background and Issues for Congress

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Summary

CVN-21 is the Navy's next planned aircraft carrier. Congress has been providing advance procurement funding for the ship since FY2001. The Navy's FY2006 budget submission requests $565 million in FY2006 advance procurement funding for the ship and defers its procurement by one year, to FY2008. The Navy estimates that CVN-21 would cost about $3.2 billion to develop and about $10.5 billion to procure, for a total estimated acquisition cost of about $13.7 billion. This report will be updated as events warrant.

Background

The Navy's Current Carrier Force. The current carrier force of 12 ships includes 2 conventionally powered carriers (the Kitty Hawk [CV-63] and the John F. Kennedy [CV-67]) and 10 nuclear-powered carriers (the one-of-a-kind Enterprise [CVN-65]) and 9 Nimitz-class ships [CVN-68 through -76]. The most recently commissioned carrier, the Ronald Reagan (CVN-76), was procured in FY1995 at a cost of $4.45 billion and entered service in July 2003 as the replacement for the Constellation (CV-64). The next carrier, the George H. W. Bush (CVN-77), was procured in FY2001 and is scheduled to enter service in 2008 as the replacement for the Kitty Hawk. The Navy is proposing to retire the John F. Kennedy in FY2006 and thereby reduce the carrier force to 11 ships.[1] The Department of Defense (DOD) is considering reducing the carrier force further, to 10 or 9 ships. These developments could affect the schedule for procuring new carriers.

The Aircraft Carrier Construction Industrial Base. All U.S. aircraft carriers procured since FY1958 have been built by Northrop Grumman's Newport News Shipbuilding (NGNN) of Newport News, VA — the only U.S. shipyard that can build large-deck, nuclear-powered aircraft carriers. The aircraft carrier construction industrial base also includes hundreds of subcontractors and suppliers in dozens of states.

[1] For discussion of this issue, see CRS Report RL32731, *Navy Aircraft Carriers: Proposed Retirement of USS John F. Kennedy — Issues and Options for Congress*, by Ronald O'Rourke.

Navy Aircraft Carrier Acquisition Programs. Navy aircraft carrier acquisition efforts currently revolve around CVN-77 and the CVN-21 program. Each of these is discussed below.

CVN-77. Congress approved $4,053.7 million in FY2001 procurement funding to complete CVN-77's total procurement cost of $4,974.9 million. The ship's estimated total procurement cost has since grown to about $6.35 billion. The ship was named in honor of former president George H. W. Bush on December 9, 2002.

CVN-21 Program. CVN-21 (also called CVN-78) is the next planned aircraft carrier after CVN-77. CVN-21 simply means aircraft carrier for the 21st Century. In August 2004 DOD began describing the CVN-21 program as a 3-ship program encompassing CVN-21 and two similar follow-on ships (CVN-79 and CVN-80) to be procured in later years. On August 19, 2004, DOD reported that the estimated development cost for the 3-ship program had increased by $728 million, to $4.33 billion. DOD estimates that the 3-ship program would have a total acquisition cost of about $36.1 billion ($4.33 billion for development and $31.75 billion for procurement), or an average of about $12 billion per ship.

CVN-21. CVN-21 is to be the replacement for the Enterprise, which is scheduled to retire in 2012-2014, at age 51-53, depending on how long its nuclear fuel core lasts. The Navy's FY2006 budget submission defers the procurement of CVN-21 by one year, to FY2008. If procured in FY2008, CVN-21 would enter service in 2015.

Congress has been providing advance procurement funding for CVN-21 since FY2001. The Navy's FY2006 budget requests $565 million in advance procurement funding for the ship. The Navy estimates that CVN-21 would cost about $3.2 billion to develop and about $10.5 billion to procure, for a total estimated acquisition cost of about $13.7 billion. This estimate is $2 billion higher than the Navy's estimate from early 2004. The Navy estimates that about $400 million of this increase is due to the decision to defer the procurement of the ship to FY2008.

Under the Navy's proposed funding plan, 35.2% of CVN-21's procurement cost is to be provided in the form of advance procurement funding between FY2001 and FY2007, 33.5% is to be provided in the procurement year of FY2008, and 31.3% is to be provided in FY2009. Dividing the main portion of the ship's procurement cost between two years (FY2008 and FY2009) is called split funding, which is a form of incremental funding. Some Navy officials, Members of Congress, and industry officials have called for making greater use of incremental funding or another funding approach called advance appropriations for funding expensive ships like CVN-21.[2]

The Navy originally wanted the carrier after CVN-77 to be a completely new-design aircraft carrier (hence its initial name of CVNX-1, rather than CVN-78). In May 1998, however, the Navy announced that it could not afford to develop an all-new design for the ship and would instead continue to modify the Nimitz-class design with each new carrier

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[2] For discussion of this issue, see CRS Report RL32776, *Navy Ship Procurement: Alternative Funding Approaches — Background and Options for Congress*, by Ronald O'Rourke.

that is procured. Under this strategy, CVN-77 and CVNX-1 were to be, technologically, the first and second ships in an evolutionary series of carrier designs.

Compared to the baseline Nimitz-class design, CVNX-1 was to require 300 to 500 fewer sailors to operate and would feature an entirely new and less expensive nuclear reactor plant, a new electrical distribution system, and an electromagnetic (as opposed to steam-powered) aircraft catapult system. In large part because of the reduction in crew size, CVNX-1 was projected to have a lower life-cycle operation and support (O&S) cost than the baseline Nimitz-class design. CVNX-1 was to cost $2.54 billion to develop and $7.48 billion to procure, giving it a total acquisition cost of $10.02 billion.

In May 2002 Secretary of Defense Donald Rumsfeld directed DOD offices to reexamine the need for 5 major defense acquisition programs, including CVNX-1. In response, the Office of the Secretary of Defense (OSD) began studying several alternatives to the Navy's carrier acquisition plan, including procuring smaller conventional carriers instead of large nuclear-powered carriers; procuring a repeat version of CVN-77 in FY2007 instead of CVNX-1; and skipping procurement of CVNX-1.

In November and December 2002, after reviewing these alternatives, OSD decided to alter the design of CVNX-1 to incorporate additional advanced features originally intended for CVNX-2 (the name at the time for the next carrier after CVNX-1). These changes included a new and enlarged flight deck, an increased allowance for future technologies (including electric weapons), and additional manpower reductions. Compared to the baseline Nimitz-class design, the ship would now require at 500 to 800 fewer sailors to operate. To signify these changes the ship's name was changed from CVNX-1 to CVN-21. Incorporating the changes increased the ship's development cost by about $600 million and its procurement cost by about $700 million. OSD reportedly did not consider CVNX-1 sufficiently transformational; the CVN-21 proposal appears intended to increase the transformational content of the ship.[3]

The Navy in the latter months of 2002 proposed to fund the procurement of CVNX-1/CVN-21 starting in FY2004 through the Navy's research and development account rather than the Navy's ship-procurement account, known formally as the Shipbuilding and Conversion, Navy (SCN) account. In December 2002, however, it was reported that the Office of Management and Budget (OMB) objected to this proposal. As a result, the Pentagon is proposing to fund the procurement of CVN-21 through the SCN account.[4]

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[3] For more on naval transformation, see CRS Report RS20851, *Naval Transformation, Background and Issues for Congress*, by Ronald O'Rourke.

[4] The Navy reportedly wanted to start funding the procurement of CVNX-1/CVN-21 through the Navy's research and development account in part because the new technologies to be incorporated into CVNX-1/CVN-21 give it somewhat the character of a research and development activity as opposed to a straight procurement action. The Navy reportedly believed that funding procurement of the ship through the research and development account would permit the Navy to better manage the technical and cost risks involved in developing and building the ship. Items acquired through research and development accounts are not subject to the full funding policy as traditionally applied to DOD weapon procurement programs. If procured through the research and development account, the Navy would be able, for example, to fund the procurement of CVN-21 using a stream of annual funding increments — a funding strategy that,

(continued...)

CVN-79. Until recently Navy plans have called for procuring CVN-79 (previously called the CVN-21 Follow-On and before that, CVNX-2) in FY2011 and commissioning it into service in 2018 as the replacement for the John F. Kennedy, which would then be 50 years old. The FY2006-FY2011 FYDP, however, defers procurement of CVN-79 beyond FY2011. And as mentioned earlier, the Navy is proposing to retire the John F. Kennedy in FY2006. Compared to CVN-21, CVN-79 would feature a more significantly redesigned flight deck, an electromagnetic arresting gear, and possibly hull-design improvements, including reactive armor protection.

CVN-80. This is the third ship in the 3-ship CVN-21 program. It nominally would be procured a few years after CVN-79.

Table 1 below shows funding for CVN-21 and CVN-79 through FY2011.

Table 1. Procurement and Development Funding for CVN-21 and CVN-79, FY2001-FY2011

(millions of then-year dollars, rounded to nearest million; figures may not add due to rounding)

	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Total thru FY11
Procurement (Shipbuilding and Conversion, Navy [SCN] account)												
21	22	135	396	1163	624	565	796	3521	3290	0	0	10512
79	0	0	0	0	0	0	0	169	441	1657	540	2807[a]
Development (Navy research and development account)												
21	231	277	319	306	354	308	272	194	171	140	94	2666[a]
79	0	0	0	0	0	0	79	88	90	92	44	393[a]

Source: U.S. Navy data provided to CRS March 23, 2005.
21= CVN-21; 79 = CVN-7; n/a = not available.
a. Additional funding to be provided beyond FY2011.

Potential Issues for Congress

Accelerating CVN-21 To FY2007. One potential issue for Congress concerns CVN-21's year of procurement. Deferring CVN-21's procurement to FY2008, and thus its entry into service to 2015, will create a minimum one-year gap between the retirement of the Enterprise in 2012-2014 and its replacement by CVN-21, temporarily reducing the size of the carrier force by one ship during that time. Some observers have proposed

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[4] (...continued)
when used in funding items procured through DOD procurement accounts, is called incremental funding. Such a strategy would reduce the financial strain that procurement of CVN-21 would place on the Navy budget in any single year. Congress, however, imposed the full funding policy on DOD in the 1950s in part to end the use of incremental funding in defense procurement, because it was viewed as having disadvantages in terms of reducing DOD budgeting discipline and making the total costs of weapons less visible. For a discussion, see CRS Report RL31404, *Defense Procurement: Full Funding Policy — Background, Issues, and Options for Congress*, by Ronald O'Rourke and Stephen Daggett.

accelerating procurement of CVN-21 back to FY2007 to reduce the operational risks of a temporary reduction in the carrier force and to avoid the roughly $400-million cost increase of procuring the ship in FY2008.

The Navy wants to procure several other expensive ships in FY2007, including the lead DD(X) destroyer and the LHA(R) amphibious ship.[5] Accelerating CVN-21 to FY2007 might require deferring procurement one of these ships, or some other ship planned for FY2007, to FY2008 or another year. One option for accelerating CVN-21 to FY2007 without necessarily deferring another ship from FY2007 to a later year would be to use incremental funding or advance appropriations to fund either CVN-21 or one or more of the ships now planned for FY2007.[6]

Affordability, Cost Effectiveness, and Potential Alternatives. With an estimated average acquisition cost of about $12 billion per ship, would the 3 carriers in the CVN-21 program be affordable and cost effective? Supporters could argue that in spite of their cost, carriers are flexible platforms that in recent years have proven themselves highly valuable in various U.S. military operations, particularly where U.S. access to overseas bases has been absent or constrained. Carriers, they could argue, have been useful not only not only for operating strike fighters and other tactical aircraft, but also for embarking Army forces (as during the 1994 Haiti crisis) and special operations forces (as in the 2001-2002 war in Afghanistan). Supporters could also argue that Congress is already heavily committed to procuring CVN-21, having approved more than $3.8 billion of the ship's total acquisition cost from FY2001 through FY2005.

Skeptics, while acknowledging the operational value of large carriers, could question whether, in light of their cost, there might be more cost effective alternatives. Potential alternatives include, among other things, smaller carriers about the size of the LHA(R) amphibious assault ship, which might cost roughly $3 billion to procure; UAV/UCAV carriers (which would be designed to embark air wings composed mostly of unmanned air vehicles [UAVs] and unmanned combat air vehicles [UCAVs]); and small carriers, such as high-speed ships large enough to embark a small number of manned tactical aircraft each. A February 2005 report on potential Navy force architecture by DOD's Office of Force Transformation (OFT) proposed a medium-sized (57,000-ton) carrier based on a commercial-like ship hull design, and also a small (13,500-ton), high-speed catamaran carrier.[7] Skeptics could argue that even though substantial funds have already been appropriated for CVN-21, not all of these funds have been expended, and that if large carriers are not cost effective compared to alternatives, Congress should not "throw good money after bad" by continuing to fund CVN-21.

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[5] For more on the DD(X) and LHA(R) programs, see CRS Report RS21059, *Navy DD(X) Destroyer Program: Background and Issues for Congress*, by Ronald O'Rourke, CRS Report RL32109, *Navy DD(X) and LCS Ship Acquisition Programs: Oversight Issues and Options for Congress*, by Ronald O'Rourke, and CRS Report RL32513, *Navy-Marine Corps Amphibious and Maritime Prepositioning Ship Programs: Background and Oversight Issues for Congress*, by Ronald O'Rourke.

[6] For more discussion, see CRS Report RL32776, op. cit.

[7] For more on the OFT report, including these two proposed carriers, see CRS Report RL32814, *Navy Force Architecture and Ship Acquisition: Selected FY2006 Issues for Congress*, by Ronald O'Rourke.

Potential Reduction in Carrier Force. A third potential issue for Congress concerns the Navy's proposal to retire the Kennedy in FY2006 and thereby reduce the carrier force to 11 ships, and the possibility that the Navy might eventually reduce the carrier force further, to 10 or 9 ships. Such a reduction might not affect plans for procuring CVN-21, but it could affect plans for procuring CVN-79 and subsequent carriers. The Navy believes that reducing the carrier force to 11 ships, or possibly fewer, is acceptable in light of the increasing capabilities of Navy carrier air wings and steps that have been taken to increase the ability of carriers to deploy rapidly in response to crises and conflicts. Other observers argue that there are good reasons to maintain a force of at least 12 carriers.[8]

Legislative Activity in FY2005[9]

H.R. 1815/S. 1042 (FY2006 Defense Authorization Bill). Section 129 of the FY2006 defense authorization bill (H.R. 1815) as reported by the **House Armed Services Committee** (H.Rept. 109-89 of May 20, 2005) would increase the FY2006 advance procurement funding request for CVN-21 by $86.7 million if DOD certifies to Congress that this amount would permit construction of CVN-21 to begin in FY2007 rather than FY2008. The report noted the cost of CVN-21 as part of a critical discussion of the increasing costs of Navy shipbuilding programs. (Page 63).

Section 122 of the FY2006 defense authorization bill (S. 1042) as reported by the **Senate Armed Services Committee** (S.Rept. 109-69 of May 17, 2005) would permit CVN-21 to be procured with split funding (i.e., incremental funding) during the period FY2007-FY2010.[10] The report expressed concern about the Navy's plan to defer procurement of CVN-21 from FY2007 to FY2008 because of the effect this would have on increasing the cost of CVN-21 and increasing the gap in time between the retirement of the Enterprise and its replacement by CVN-21. The report recommended increasing the FY2006 advance procurement funding request for the ship by $86.7 million so as to support the acceleration of procurement of CVN-21 to FY2007. (Pages 66-67; see also page 50)

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[8] For more discussion, see CRS Report RL32731, op cit.

[9] For legislative activity relating to the issue of the size of the carrier force, see CRS Report RL32731, op cit.

[10] For additional discussion of incremental funding in the procurement of Navy ships, see CRS Report RL32914, *Navy Ship Acquisition: Options for Lower-Cost Ship Design — Issues for Congress*, by Ronald O'Rourke, and CRS Report RL31404, op cit.