



# **Navy Ford (CVN-78) Class Aircraft Carrier Program: Background and Issues for Congress**

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## Summary

CVN-78 and CVN-79 are the first two ships in the Navy's new Gerald R. Ford (CVN-78) class of nuclear-powered aircraft carriers.

**CVN-78:** CVN-78 was procured in FY2008 and is scheduled to enter service in 2015. The ship's procurement cost is estimated in the proposed FY2010 budget at \$10,846 million in then-year dollars—\$389 million (about 3.7%) more than the estimate in the FY2009 budget. Although CVN-78 was procured in FY2008, it is being funded with four-year incremental funding across FY2008-FY2011. The proposed FY2010 requests \$739.3 million in procurement funding to help complete the ship's procurement cost.

The Congressional Budget Office (CBO) reported in June 2008 that it estimates that CVN-78 will cost about \$900 million more than the Navy estimates, and that if "CVN-78 experienced cost growth similar to that of other lead ships that the Navy has purchased in the past 10 years, costs could be much higher still." The Government Accountability Office (GAO) and other observers have expressed concern that difficulties in developing the CVN-78's new electromagnetic aircraft catapult (called the electromagnetic aircraft launch system, or EMALS), could delay the schedule for building the ship and increase the ship's construction cost. GAO highlighted the issue in a March 2009 report to Congress.

**CVN-79:** CVN-79 was scheduled under the FY2009 budget to be procured in FY2012. Under the proposed FY2010 budget, the ship's procurement would be deferred one year, to FY2013. CVN-79's procurement cost was estimated in the FY2009 budget at about \$9.2 billion in then-year dollars. The ship has been receiving advance procurement (AP) funding since FY2007 (including about \$1.2 billion in AP funding in FY2009). The proposed FY2010 budget requests \$484.4 million in AP funding for the ship. (The FY2009 budget had projected that about \$807 million would be requested in FY2010.) Deferring CVN-79's procurement to FY2013 may have increased its estimated procurement cost, and could also increase the cost of Virginia-class submarines under construction at the same shipyard.

**Potential FY2010 issues for Congress:** One potential FY2010 issue for Congress is whether to approve DOD's proposal to defer CVN-79's procurement to FY2013, or instead maintain FY2012 as the ship's year of procurement. Congress's decision on this issue could affect, among other things, the amount of AP funding that Congress provides for the ship in FY2010. A second potential FY2010 issue for Congress is whether to provide a legislative waiver permitting the Navy's carrier force to temporarily decline from 11 ships to 10 ships during a 33-month period between 2012 (when the aging aircraft carrier Enterprise [CVN-65] is scheduled to retire) and 2015 (when CVN-78 is scheduled to enter service as its replacement). The Navy asked for such a waiver in the FY2008 and FY2009 budgets. Congress each time did not grant the waiver, and the Navy has asked for it again as part of the FY2010 budget. Congress's decision on whether to grant the waiver could affect FY2010 maintenance-related funding requirements for the Enterprise. This report will be updated as events warrant.

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## **Introduction**

CVN-78 and CVN-79 are the first two ships in the Navy's new Gerald R. Ford (CVN-78) class of nuclear-powered aircraft carriers (CVNs).

### **CVN-78**

CVN-78 was procured in FY2008 and is scheduled to enter service in 2015. The ship's procurement cost is estimated in the proposed FY2010 budget at \$10,846 million in then-year dollars—\$389 million (about 3.7%) more than the estimate in the FY2009 budget. Although CVN-78 was procured in FY2008, it is being funded with four-year incremental funding across FY2008-FY2011. The proposed FY2010 requests \$739.3 million in procurement funding to help complete the ship's procurement cost.

### **CVN-79**

CVN-79 was scheduled under the FY2009 budget to be procured in FY2012. Under the proposed FY2010 budget, the ship's procurement would be deferred one year, to FY2013. CVN-79's procurement cost was estimated in the FY2009 budget at about \$9.2 billion in then-year dollars. The ship has been receiving advance procurement (AP) funding since FY2007 (including about \$1.2 billion in AP funding in FY2009). The proposed FY2010 budget requests \$484.4 million in AP funding for the ship. (The FY2009 budget had projected that about \$807 million would be requested in FY2010.) Deferring CVN-79's procurement to FY2013 may have increased its estimated procurement cost, and could also increase the cost of Virginia-class submarines under construction at the same shipyard.

### **FY2010 Issues**

One potential FY2010 issue for Congress is whether to approve DOD's proposal to defer CVN-79's procurement to FY2013, or instead maintain FY2012 as the ship's year of procurement. Congress's decision on this issue could affect, among other things, the amount of AP funding that Congress provides for the ship in FY2010.

A second potential FY2010 issue for Congress is whether to provide a legislative waiver permitting the Navy's carrier force to temporarily decline from 11 ships to 10 ships during a 33-month period between 2012 (when the aging aircraft carrier Enterprise [CVN-65] is scheduled to retire) and 2015 (when CVN-78 is scheduled to enter service as its replacement). The Navy asked for such a waiver in the FY2008 and FY2009 budgets. Congress each time did not grant the waiver, and the Navy has asked for it again as part of the FY2010 budget. Congress's decision on whether to grant the waiver could affect FY2010 maintenance-related funding requirements for the Enterprise.

## Background

### The Navy's Aircraft Carrier Force

The Navy's aircraft carrier force consists of 11 nuclear-powered ships—the one-of-a-kind Enterprise (CVN-65) and 10 Nimitz-class ships (CVNs 68 through 77). The most recently commissioned carrier, the George H. W. Bush (CVN-77), the final Nimitz-class ship, was procured in FY2001 and commissioned into service on January 10, 2009.<sup>1</sup> CVN-77 replaced the Kitty Hawk (CV-63), which was the Navy's last remaining conventionally powered carrier.<sup>2</sup>

### Aircraft Carrier Construction Industrial Base

All U.S. aircraft carriers procured since FY1958 have been built by Newport News Shipbuilding of Newport News, VA, a shipyard that forms part of Northrop Grumman Shipbuilding (NGSB). Newport News is 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.

### Gerald R. Ford (CVN-78) Class Program

The Gerald R. Ford (CVN-78) class carrier design is the successor to the Nimitz-class design.<sup>3</sup> Compared to the Nimitz-class design, the Ford-class design will incorporate several improvements, including an ability to generate substantially more aircraft sorties per day and features permitting the ship to be operated by several hundred fewer sailors than a Nimitz-class ship, significantly reducing life-cycle operating and support costs. Navy plans call for procuring at least three Ford-class carriers—CVN-78, CVN-79, and CVN-80.

### CVN-78

#### *Overview*

CVN-78, which was named in 2007 for president Gerald R. Ford,<sup>4</sup> was procured in FY2008 and is scheduled to enter service in 2015 as the replacement for Enterprise (CVN-65), which is

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<sup>1</sup> Congress approved \$4,053.7 million in FY2001 procurement funding to complete CVN-77's then-estimated total procurement cost of \$4,974.9 million. Section 122 of the FY1998 defense authorization act (H.R. 1119/P.L. 105-85 of November 18, 1997) limited the ship's procurement cost to \$4.6 billion, plus adjustments for inflation and other factors. The Navy testified in 2006 that with these permitted adjustments, the cost cap stood at \$5.357 billion. The Navy also testified that CVN-77's estimated construction cost had increased to \$6.057 billion, or \$700 million above the adjusted cost cap. Consequently, the Navy in 2006 requested that Congress increase the cost cap to \$6.057 billion. Congress approved this request: Section 123 of the FY2007 defense authorization act (H.R. 5122/P.L. 109-364 of October 17, 2006), increased the cost cap for CVN-77 to \$6.057 billion.

<sup>2</sup> The Kitty Hawk was decommissioned on January 31, 2009.

<sup>3</sup> The CVN-78 class was earlier known as the CVN-21 class, which meant nuclear-powered aircraft carrier for the 21<sup>st</sup> century.

<sup>4</sup> Section 1012 of the FY2007 defense authorization act (H.R. 5122/P.L. 109-364 of October 17, 2006) expressed the sense of the Congress that CVN-78 should be named for president Gerald R. Ford. On January 16, 2007, the Navy (continued...)

scheduled to retire in 2012, at age 52. The Navy projects that there will be a 33-month period between the scheduled decommissioning of Enterprise in November 2012 and the scheduled commissioning of CVN-78 in September 2015. During this 33-month period, the Navy's carrier force will temporarily decline from 11 ships to 10.

CVN-78's procurement cost was estimated in the FY2009 budget at about \$10,457 million in then-year dollars. This figure included about \$2.4 billion in detailed design and non-recurring engineering (DD/NRE) costs for the CVN-78 class, and about \$8.1 billion to build CVN-78 itself. (Including the DD/NRE costs for a ship class in the procurement cost of the lead ship in the class is a traditional Navy ship procurement budgeting practice.) CVN-78 in the FY2009 budget also had about \$3.3 billion in research and development costs, much of which is also for the class as a whole. These research and development costs brought the ship's total estimated acquisition (i.e., research and development plus procurement) cost in the FY2009 budget to about \$13.7 billion.

The proposed FY2010 budget estimates CVN-78's procurement cost at about \$10,846 million in then-year dollars—\$389 million (or about 3.7%) more than the estimate in the FY2009 budget.

Although CVN-78 was procured in FY2008, it is being funded with four-year incremental funding across FY2008-FY2011. This is consistent with Section 121 of the FY2007 defense authorization act (H.R. 5122/P.L. 109-364 of October 17, 2006), which granted the Navy the authority to use four-year incremental funding for CVN-78, CVN-79, and CVN-80. The proposed FY2010 budget requests \$739.3 million in procurement funding to help complete the ship's procurement cost.

### ***Potential for Cost Growth***

Both the Congressional Budget Office (CBO) and the Government Accountability Office (GAO) have questioned the accuracy of the Navy's cost estimate for CVN-78. CBO reported in June 2008 that it estimates that CVN-78 will cost \$11.2 billion in constant FY2009 dollars, or about \$900 million more than the Navy's estimate of \$10.3 billion in constant FY2009 dollars, and that if "CVN-78 experienced cost growth similar to that of other lead ships that the Navy has purchased in the past 10 years, costs could be much higher still." CBO also reported that, although the Navy publicly expresses confidence in its cost estimate for CVN-78, the Navy had assigned a confidence level of less than 50% to its estimate, meaning that the Navy believes there is more than a 50% chance that the estimate will be exceeded.<sup>5</sup> GAO reported in August 2007 that:

Costs for CVN 78 will likely exceed the budget for several reasons. First, the Navy's cost estimate, which underpins the budget, is optimistic. For example, the Navy assumes that CVN 78 will be built with fewer labor hours than were needed for the previous two carriers. Second, the Navy's target cost for ship construction may not be achievable. The shipbuilder's initial cost estimate for construction was 22 percent higher than the Navy's cost target, which was based on the budget. Although the Navy and the shipbuilder are working

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announced that CVN-78 would be so named. CVN-78 and other carriers built to the same design will consequently be referred to as Ford (CVN-78) class carriers. For further discussion of Navy ship names, see CRS Report RS22478, *Navy Ship Names: Background for Congress*, by Ronald O'Rourke.

<sup>5</sup> Congressional Budget Office, *Resource Implications of the Navy's Fiscal Year 2009 Shipbuilding Plan*, June 9, 2008, p. 20.

on ways to reduce costs, the actual costs to build the ship will likely increase above the Navy's target. Third, the Navy's ability to manage issues that affect cost suffers from insufficient cost surveillance. Without effective cost surveillance, the Navy will not be able to identify early signs of cost growth and take necessary corrective action.<sup>6</sup>

### ***Electromagnetic Aircraft Launch System (EMALS)***

The Navy faces challenges in developing certain new technologies intended for CVN-78, particularly the electromagnetic aircraft launch system (EMALS)—an electromagnetic (as opposed to the traditional steam-powered) aircraft catapult. Problems in developing EMALS or other technologies could delay the ship's completion and increase its development and/or procurement cost. GAO reported in March 2009 that:

Nine of the CVN 21 program's 14 critical technologies are not yet fully mature. Of these technologies, EMALS, the advanced arresting gear, and the dual band radar present the greatest risk to the ship's cost and schedule. Problems during EMALS development have already resulted in cost growth and schedule delays. In order to meet CVN 78's delivery date, the Navy adopted a strategy that will test, produce, and ultimately install EMALS with a high degree of concurrency. In September 2008, the contractor completed the first round of high-cycle testing, gaining confidence in the performance of the generator—a source of past problems. Contractor-led integrated land-based system testing will not be complete until the end of fiscal year 2011—2-years later than estimated in December 2007. Assuming no further delays, EMALS will not demonstrate full performance of a shipboard ready system until at least 7 months after installation on CVN 78 has begun. The advanced arresting gear has completed early verification tests that proved the system's concept. Integrated land-based testing with both simulated and live aircraft has slipped by one year since last year's assessment and is now scheduled for 2010. The Navy recently postponed delivery of the arresting gear to the shipyard. Consequently, the shipbuilder will not install the gear prior to laying the flight deck—a less optimal and more costly approach to building the ship. The dual band radar—which includes the volume search and multifunction radars—is being developed as part of the DDG 1000 program. While the multifunction radar has been tested at sea, considerable testing remains for the volume search radar. Land-based tests of the volume search radar prototype will not be completed until May 2009—2 years later than planned. Upcoming land-based tests will be conducted at a lower voltage than needed to meet requirements—and without the radome (the radar's composite shield). Full power output will not be tested on a complete system until 2012. Tests of carrier-specific functionality will not conclude until shortly before shipyard delivery in 2013 leaving little time to resolve problems before ship installation....

The program has faced challenges in maintaining its design schedule due to delays in the receipt of technical information on EMALS and the advanced arresting gear; however, the Navy believes this issue has been largely resolved. The shipbuilder anticipates changes to CVN 78's design based on the results of EMALS testing....

A February 2008 program assessment recommended a number of changes to the EMALS program to improve performance. The Navy re-planned the test program and changed the

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<sup>6</sup> Government Accountability Office, *Defense Acquisitions[:]* Navy Faces Challenges Constructing the Aircraft Carrier Gerald R. Ford within Budget, GAO-07-866, August 2007, summary page. See also Government Accountability Office, *Defense Acquisitions[:]* Realistic Business Cases Needed to Execute Navy Shipbuilding Programs, Statement of Paul L. Francis, Director, Acquisition and Sourcing Management Team, Testimony Before the Subcommittee on Seapower and Expeditionary Forces, Committee on Armed Services, House of Representatives, July 24, 2007 (GAO-07-943T), p. 15.

management approach. The CVN 21 program office is now responsible for overseeing EMALS production and ship integration, rather than the Naval Air Systems Command. In addition, EMALS will no longer be provided as government-purchased equipment. Instead, the shipbuilder will purchase EMALS, giving it a more direct role in managing the integration on CVN 78. The cost impact of this change has not been finalized.<sup>7</sup>

Navy officials testified on April 1, 2009, that they were reviewing the EMALS situation and that “We do not see that it will have an impact on the actual schedule of the carrier at this point in time.” They stated that “We’re looking at all options. There has been cost growth to the EMALS system. We’re looking at—at the total cost of acquisition and life cycle for EMALS and steam [catapults]. We’re looking at schedule and what does—does that do if we went back to steam [catapults] on CVN-78. What would that do to schedules? We’re in the process of getting information from industry so that we can make an informed decision and we’ve had independent technical looks at it within the department.” They also stated that “The technology itself is not new, but it’s the application in the aircraft carrier [that’s new]. And so there is a lot of rigor we want to go through for component testing so that we understand the reliability of the components as well as system testing. We are in the component testing phase right now. We have seen minor issues in testing which we’ve been able to resolve. But there is some concurrency with the schedules [for EMALS development and CVN-78 construction] and that’s one of the things we want to evaluate going forward. Is the [EMALS] development schedule still ongoing? How do we—how do we mitigate the risk to this carrier schedule so that that does (inaudible). Right now, we don’t see an impact to the carrier schedule.” The Navy officials testified that they were waiting to receive an estimate from Northrop Grumman Newport News on the potential cost impact of shifting to steam catapults for CVN-78. They stated that: “Right now, Mr. Chairman, the plan is—is to go to EMALS, or to continue with Electromagnetic Aircraft Launching System. That’s going to be briefed to the CNO and the acting secretary here in the next week to 10 days.”<sup>8</sup>

On April 16, 2009, it was reported that the Navy had decided, based on its review of the situation, to continue with the plan to build CVN-78 with EMALS. A Navy spokesman stated: “This decision is based on completion of an extensive review of the EMALS program, which included consideration of many significant factors and represents a balance between cost, schedule, technical performance, and consideration of the risks to each.”<sup>9</sup> Another Navy spokesman stated: “To ensure the program delivers on schedule, while limiting cost growth, the Navy is entering into detailed, fixed-price contract negotiations for procurement of production-level equipment while implementing additional risk management efforts associated with completion of development testing, production planning, installation and test.”<sup>10</sup>

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<sup>7</sup> Government Accountability Office, *Defense Acquisitions[:] Assessments of Selected Weapon Programs*, GAO-09-326SP, March 2009, pp. 68.

<sup>8</sup> Source: Transcript of spoken testimony of Allison Stiller, Deputy Assistant Secretary of the Navy (Ship Programs), and (for the final quote) Vice Admiral Bernard McCullough, Deputy Chief of Naval Operations for Integration of Capabilities and Resources, at an April 1, 2009, hearing on Navy shipbuilding before the Defense subcommittee of the House Appropriations Committee. The comments by Stiller and McCullough came in response to questions on the EMALS issue posed by Representative John Murtha, the subcommittee chairman. For press reports discussing the EMALS issue, see Peter Frost, “Questions Swirl About New Aircraft Catapult Systems For Next Carrier,” *DailyPress.com* (Newport News, VA), March 31, 2009; Emelie Rutherford and Geoff Fein, “Navy Exploring Impact of Switching From EMALS To Steam Catapults For CVN-78,” *Defense Daily*, April 2, 2009: 7-8; Rebekah Gordon, “Navy Examining Impacts of Switching to Steam Catapult on CVN-78,” *Inside the Navy*, April 6, 2009; and Christopher P. Cavalas, “Next-Gen Carrier Launch System Could Be Shelved,” *DefenseNews.com*, April 6, 2009.

<sup>9</sup> Andrew Tilghman, “Navy to Press on With EMALS,” *NavyTimes.com*, April 16, 2009.

<sup>10</sup> Geoff Fein, “Navy Stands By EMALS As Aircraft Launch System For CVN-78,” *Defense Daily*, April 17, 2009: 3- (continued...)



## **CVN-79**

CVN-79 was scheduled under the FY2009 budget to be procured in FY2012. Under the proposed FY2010 budget, the ship's procurement would be deferred one year, to FY2013.<sup>11</sup> CVN-79's procurement cost was estimated in the FY2009 budget at about \$9.2 billion in then-year dollars. After factoring out inflation, this figure equates to something a bit less than the FY2009 budget's estimate of \$8.1 billion to build CVN-78 itself. The ship has been receiving advance procurement (AP) funding since FY2007 (including about \$1.2 billion in AP funding in FY2009). The proposed FY2010 budget requests \$484.4 million in AP funding for the ship. (The FY2009 budget had projected that about \$807 million would be requested in FY2010.) Deferring CVN-79's procurement to FY2013 may have increased its estimated procurement cost, and could also increase the cost of Virginia-class submarines under construction at the same shipyard.

## **CVN-80**

Under the FY2009 budget, CVN-80 was scheduled to be procured in FY2016, and to enter service around 2023. Under the proposed FY2010 budget, which proposes shifting carrier procurement to five-year intervals, the ship's procurement would presumably be deferred two years, to FY2018 (i.e., five years after the procurement of CVN-79 in FY2013). CVN-80's procurement cost was estimated in the FY2009 budget at about \$10.7 billion in then-year dollars. This estimate might have been affected by the deferral of the ship's procurement to FY2018. The FY2009 budget projected that \$201 million in initial AP funding for the ship would be requested in FY2012, but the deferral of the ship's procurement to FY2018 might defer the ship's initial AP funding to FY2014.

## **Procurement Cost Cap**

Section 122 of P.L. 109-364 established a procurement cost cap for CVN-78 of \$10.5 billion, plus adjustments for inflation and other factors, and a procurement cost cap for subsequent Ford-class carriers of \$8.1 billion each, plus adjustments for inflation and other factors. The conference report on P.L. 109-364 (H.Rept. 109-702 of September 29, 2006) discusses Section 122 on pages 551-552.

# **Issues for Congress**

## **Proposed Deferral of CVN-79 Procurement to FY2013**

One potential FY2010 issue for Congress is whether to approve DOD's proposal to defer CVN-79's procurement to FY2013, or instead maintain FY2012 as the ship's year of procurement.

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<sup>11</sup> On April 6, 2009, Secretary of Defense Robert Gates announced a number of decisions regarding the Department of Defense's (DOD's) proposed FY2010 defense budget. Among these was a decision to "shift the Navy Aircraft Carrier program to a five-year build cycle[,] placing it on a more fiscally sustainable path." The previous carrier procurement schedule included a combination of four- and five-year intervals. Shifting carrier procurement to five-year intervals would defer the procurement of CVN-79 from FY2012 to FY2013.

Congress's decision on this issue could affect, among other things, the amount of AP funding that Congress provides for the ship in FY2010. In considering whether to defer procurement of CVN-79 to FY2013, Congress may consider various factors, including the following:

- the comparative costs of procuring CVN-79 in FY2012 or FY2013;
- the impact of deferring CVN-79's procurement to FY2013 on the procurement costs of other Navy ships, particularly Virginia-class submarines being built at the same shipyard;<sup>12</sup>
- the comparative impact on the aircraft carrier industrial base (including component makers) of procuring CVN-79 in FY2012 or FY2013; and
- the potential impact on funding for other defense programs of procuring CVN-79 in FY2012 or FY2013.<sup>13</sup>

## **Legislative Waiver For Temporary Decline to 10-Carrier Force**

A second potential FY2010 issue for Congress is whether to provide a legislative waiver to permit the Navy's carrier force to temporarily decline from 11 ships to 10 ships during the period 2012-2015. As mentioned earlier, during the projected 33-month period between the scheduled decommissioning of Enterprise in 2012 and the scheduled commissioning of CVN-78 in 2015, the carrier force is to temporarily decline from 11 ships to 10. To permit this to happen, the Navy needs a legislative waiver in connection with 10 USC 5062(b), which requires the Navy to maintain a force of at least 11 operational carriers. The Navy asked for such a waiver in the FY2008 and FY2009 budgets. Congress each time did not grant the waiver, and the Navy has asked for it again as part of the FY2010 budget. Congress's decision on whether to grant the waiver could affect FY2010 maintenance-related funding requirements for the Enterprise.

The Navy testified in 2008 and 2009 that keeping Enterprise in operation for an additional three years (i.e., to 2015) would require performing more than \$1 billion in maintenance work on the ship and the expenditure of an additional \$1 billion or so in ship operation and support costs, the result of which would be one additional six- or seven-month deployment of the ship during the period 2012-2015. The Navy also stated that doing the required maintenance work on Enterprise would throw off the schedule for performing mid-life nuclear refueling overhauls on other Navy CVNs, affecting the operational availability of those ships. The Navy argued that the total cost of about more than \$2 billion and the disruption to the CVN refueling schedule would not be worth the one additional deployment for Enterprise, and that the operational risks associated with having the carrier force temporarily decline to 10 ships will be mitigated by taking steps (such as

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<sup>12</sup> Virginia-class submarines are jointly built at Newport News Shipbuilding and General Dynamics' Electric Boat Division. For more on the Virginia-class program, see CRS Report RL32418, *Navy Attack Submarine Procurement: Background and Issues for Congress*, by Ronald O'Rourke.

<sup>13</sup> A potential additional factor to consider concerns the timing of CVN-79's entry into service relative to the retirement of the ship it replaces. CVN-79 may replace Nimitz (CVN-68), which entered service in 1975. Since CVNs have 50-year expected service lives, the Nimitz's expected service life would appear to extend to 2025. If CVN-79 is procured in FY2013, it might enter service in 2020 or perhaps 2021. On this basis, it would appear that CVN-68 has more than enough expected service life to remain in service until CVN-79 enters service, even if CVN-79's procurement is deferred to FY2013. Expected service lives, however, are generally accurate to within plus or minus 10% or so of the quoted figure. If CVN-68s turns out to be 45 years rather than 50 years, deferring procurement of CVN-79 from FY2012 to FY2013 might create a possibility of the carrier force dropping temporarily from 11 ships to 10 for a short period between the retirement of CVN-68 and the entry into service of CVN-79.

rescheduling certain maintenance actions for other carriers away from the 2012-2015 period) to maximize the operational availability of the other 10 carriers during the period 2012-2015.<sup>14</sup>

Skeptics of the Navy's request for a legislative waiver have expressed concern that problems in developing EMALS or other issues could delay CVN-78's entry into service, which would increase the time during which the Navy has 10 operational carriers from 33 months to some greater period. In light of this risk, they argue, the cost to keep Enterprise in operation beyond 2012 could be worthwhile. They have also argued that until the Navy receives a legislative waiver, the Navy is required by law to budget the funds needed to keep Enterprise in service until it is replaced by CVN-78.

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<sup>14</sup> Source: Transcript of spoken remarks of Vice Admiral Bernard McCullough at a March 14, 2008, hearing on Navy shipbuilding before the Seapower and Expeditionary Forces subcommittee of the House Armed Services Committee.

## Appendix. CVN-78 Funding in FY2009 Budget

**Table A-1** shows procurement and research and development funding for CVNs 78, 79, and 80 ships as planned in the FY2009 defense budget. The proposed FY2010 defense budget was submitted as a single-year budget, without an accompanying Future Years Defense Plan for the period FY201-FY2015 or a 30-year shipbuilding plan for the period FY2010-FY2039. Consequently, funding data like that shown in the table below is not readily available in the FY2010 budget documentation. The table below is provided as a reference for what the program's multi-year funding profile looked like under the FY2009 budget. Readers are cautioned that a similar profile in the FY2010 would show different funding figures, particularly for FY2010 and subsequent years.

**Table A-1. Funding for CVNs 78, 79, and 80 in FY2009 Budget**

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

CVN	97-00	01	02	03	04	05	06	07	08	09	10	11	12	13	Total thru FY2013
<b>Procurement (Shipbuilding and Conversion, Navy [SCN] account)</b>															
78	0	22	135	395	1163	623	619	736	2685	2712	688	679	0	0	10457
79	0	0	0	0	0	0	0	53	124	1214	807	465	2312	2286	7261
80	0	0	0	0	0	0	0	0	0	0	0	0	201	886	1087
<b>Subtotal</b>	0	22	135	395	1163	623	619	789	2809	3926	1495	1144	2513	3172	18805
<b>Research and development (Research, Development, Test and Evaluation [RD TEN] account)</b>															
78	308	231	277	317	306	350	303	284	202	223	153	109	107	106	3276
79	0	0	5	0	0	0	0	17	27	38	39	30	19	17	192
80	0	0	0	0	0	0	0	0	0	0	0	42	48	48	138
<b>Subtotal</b>	308	231	282	317	306	350	303	301	229	261	192	181	174	171	3606
<b>TOTAL</b>	308	253	417	712	1469	973	922	1090	3038	4187	1687	1325	2687	3343	22411

**Source:** Navy data provided to CRS on March 6, 2008, based on FY2009 budget submission.

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