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Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress

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Summary

In February 2006, the Navy proposed a future ship force structure of 313 ships, including, among other things, 14 ballistic missile submarines (SSBNs), 11 (and eventually 12) aircraft carriers, 48 attack submarines (SSNs), 88 cruisers and destroyers, 55 Littoral Combat Ships (LCSs), 31 amphibious ships, and a Maritime Prepositioning Force (Future), or MPF(F), squadron with 12 new-construction amphibious and sealift-type ships. In February 2007, the Navy submitted a 6-year (FY2008-FY2013) shipbuilding plan and a 30-year (FY2008-FY2037) shipbuilding plan.

The final report on the 2005 Quadrennial Defense Review supported a fleet of more than 281 ships, including 11 carriers, but did not explicitly endorse a 313-ship fleet including the numbers that the Navy has outlined for other types of ships.

Within the 313-ship proposal, some observers have questioned the Navy's planned figures for SSNs and amphibious ships, and have suggested that a fleet with 55 or more SSNs and 33 amphibious ships would be more appropriate.

The Navy's 30-year shipbuilding plan does not include enough ships to fully support all elements of the 313-ship fleet consistently over the long run. Deficiencies in the 30-year shipbuilding plan relative to the 313-ship fleet include 1 amphibious ship, 4 cruise missile submarines (SSGNs), 8 SSNs, and 10 cruisers and destroyers.

The Navy says that for its shipbuilding plans to be affordable and executable, the Navy needs to be funded at a certain overall level, control certain non-shipbuilding expenditures, and build ships within estimated costs. Some observers have questioned the Navy's ability to do these things. The Congressional Budget Office estimates that shipbuilding costs will be about 34% higher than the Navy estimates. If the Navy cannot meet its goals regarding its overall level funding, non-shipbuilding expenditures, and shipbuilding costs, the Navy's shipbuilding plans may become difficult or impossible to execute, particularly after FY2011. This report will be updated as events warrant.

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Introduction and Issue for Congress

In February 2006, the Navy proposed a future ship force structure of 313 ships, including, among other things, 14 ballistic missile submarines (SSBNs), 11 (and eventually 12) aircraft carriers, 48 attack submarines (SSNs), 88 cruisers and destroyers, 55 Littoral Combat Ships (LCSs), 31 amphibious ships, and a Maritime Prepositioning Force (Future), or MPF(F), squadron with 12 new-construction amphibious and sealift-type ships. In February 2007, the Navy submitted a 6-year (FY2008-FY2013) shipbuilding plan and a 30-year (FY2008-FY2037) shipbuilding plan.

The issue for Congress is how to respond to the Navy's 313-ship proposal and associated shipbuilding plans. Decisions that Congress makes regarding Navy force structure and shipbuilding programs could significantly affect future U.S. military capabilities, Navy funding requirements, and the Navy shipbuilding industrial base.

Background

Navy's Proposed 313-Ship Fleet

What types of ships are included in the 313-ship proposal, and how does this proposal compare to previous Navy ship force structure proposals?

Table 1 shows the composition of the Navy's 313-ship proposal and compares it to other recent Navy force structure proposals. The 313-ship proposal can be viewed as roughly consistent with other recent Navy ship force-structure proposals.

Table 1. Recent Navy Ship Force Structure Proposals

Ship type	2006 Navy proposal for 313-ship fleet	Early-2005 Navy proposal for fleet of 260-325 ships		2002-2004 Navy proposal for 375-ship Navy[a]	2001 QDR plan for 310-ship Navy
		260-ships	325-ships		
Ballistic missile submarines (SSBNs)	14	14	14	14	14
Cruise missile submarines (SSGNs)	4	4	4	4	2 or 4[b]
Attack submarines (SSNs)	48	37	41	55	55
Aircraft carriers	11/12[c]	10	11	12	12
Cruisers, destroyers, frigates	88	67	92	104	116
Littoral Combat Ships (LCSs)	55	63	82	56	0
Amphibious ships	31	17	24	37	36
MPF(F) ships[d]	12[d]	14[d]	20[d]	0[d]	0[d]
Combat logistics (resupply) ships	30	24	26	42	34
Dedicated mine warfare ships	0	0	0	26[e]	16
Other[f]	20	10	11	25	25
Total battle force ships	**313/314**	**260**	**325**	**375**	**310 or 312**

Sources: 2001 QDR report, U.S. Navy data, *Report to Congress on Annual Long-Range Plan for Construction of Naval Vessels for FY2007*, and the analogous report to Congress for FY2008.

a. Initial composition. Composition was subsequently modified.

b. The report on the 2001 QDR did not mention a specific figure for SSGNs. The Administration's proposed FY2001 DOD budget requested funding to support the conversion of two available Trident SSBNs into SSGNs, and the retirement of two other Trident SSBNs. Congress, in marking up this request, supported a plan to convert all four available SSBNs into SSGNs.

c. 11 carriers, and eventually 12 carriers.

d. Today's 16 Maritime Prepositioning Force (MPF) ships are intended primarily to support Marine Corps operations ashore, rather than Navy combat operations, and thus are not counted as Navy battle force ships. The Navy's planned MPF (Future) ships, however, may be capable of contributing to Navy combat capabilities (for example, by supporting Navy aircraft operations). For this reason, MPF(F) ships are counted here as battle force ships.

e. The figure of 26 dedicated mine warfare ships includes 10 ships maintained in a reduced mobilization status called Mobilization Category B. Ships in this status are not readily deployable and thus do not count as battle force ships. The 375-ship proposal thus implied transferring these 10 ships to a higher readiness status.

f. Includes, among other things, command ships and support ships.

Potential for Changing 313-Ship Proposal

Could the Navy change the 313-ship proposal at some point?

The Navy in 2006 stated in general that it may change the 313-ship proposal at some point. The Navy in 2007 has suggested more specifically that it may change the planned numbers of amphibious ships, MPF(F) ships, and SSBNs.

In General. A May 2006 Navy planning document stated that the

> Navy will continue to refine capability and capacity requirements in POM-08 [the Program Objective Memorandum for the FY2008 budget] by reviewing the force mix against emerging and evolving threats. [The] Navy will conduct an analytic review and analysis of potential alternative capacity and capability mixes that will support Joint Force requirements and enable stable shipbuilding and procurement accounts.[1]

Amphibious and MPF(F) Ships. The Navy's February 2007 report on the 30-year (FY2008-FY2037) shipbuilding plan stated:

> Future combat operations may require us to revisit many of the decisions reflected in this report, including those associated with amphibious lift. As the Navy embarks on production of the Maritime Prepositioning Force in this FYDP, the Navy will continue to analyze the utility of these ships in terms of their contribution to, and ability to substitute for, the assault echelon forces in the Navy's future battle-force inventory. The current force represents the best balance between these forces available today. However, changing world events and resulting operational risk associated with the various force structure elements that make up these two components of overall lift will be analyzed to ensure the Navy is not taking excessive risk in lift capability and capacity. While there needs to be a balance between expeditionary and prepositioning ships for meeting the overall lift requirement, future reports may adjust the level of support in one or both of these solutions. Any adjustments made in these capabilities will have to be accommodated in light of the resources available and could require the Navy to commit additional funding to this effort in order to support the overall balance of our shipbuilding program.[2]

SSBNs. The Navy testified in March 2007 that the next class of ballistic missile submarines (SSBNs) will be fueled with a nuclear fuel core sufficient for the ships' entire expected service lives. Consequently, the Navy stated, these SSBNs will not need a mid-life nuclear refueling. As a result, the Navy testified, the Navy in the future may be able to meet its requirements for SSBN deployments with a force of 12 SSBNs rather than 14.[3] This suggests that the Navy, in future

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[1] U.S. Department of the Navy, *Navy Strategic Plan In Support of Program Objective Memorandum 08*, May 2006, p. 11.

[2] U.S. Navy, *Report to Congress on Annual Long-Range Plan for Construction of Naval Vessels for FY 2008*, p. 5.

[3] Navy testimony to Senate Armed Services Committee, March 29, 2007 (transcript of hearing).

presentations of the 313-ship proposal, may change the required number of SSBNs from 14 to 12.

Modified Description of Required Number of Aircraft Carriers

Has the Navy recently modified its description of the number of aircraft carriers in the 313-ship proposal?

In late-March 2007, the Navy modified its description of the number of aircraft carriers in the 313-ship proposal. From February 2006 through early-March 2007, the Navy described the 313-ship proposal as one centered on, among other things, 11 aircraft carriers.[4] In late-March 2007, the Navy modified its description of the 313-ship proposal to one centered on, among other things, 11, and eventually 12, aircraft carriers.[5]

The Navy's modification of its description of the number of aircraft carriers in the 313-ship proposal occurred about a week after the decommissioning of the aircraft carrier John F. Kennedy (CV-67), which occurred on March 23, 2007. The decommissioning of the Kennedy reduced the Navy's carrier force from 12 ships to 11. The Navy had proposed decommissioning the Kennedy in its FY2006 and FY2007 budgets, and opponents of the Kennedy's retirement had resisted the proposal. If the Navy, prior to the Kennedy's decommissioning, had described the 313-ship fleet as one centered on, among other things, 11, and eventually 12, aircraft carriers, opponents of the Kennedy's decommissioning might have cited the "eventually 12" part as evidence that the Navy really requires 12 carriers, not just 11.[6]

Navy Shipbuilding Plans

What ships are proposed for procurement in the Navy's shipbuilding plans?

FY2008-FY2013 Shipbuilding Plan. **Table 2** shows the Navy's FY2008-FY2013 ship-procurement plan.

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[4] See, for example, Navy testimony before the House Armed Services Committee on march 1, 2007 (transcript of hearing).

[5] See, for example, Navy testimony before the Defense subcommittee of the Senate Appropriations Committee on March 28, 2007, and before the Senate Armed Services Committee on March 29, 2007 (transcripts of hearings).

[6] For additional discussion of the debate over the Kennedy's retirement, see CRS Report RL32731, *Navy Aircraft Carriers: Retirement of USS John F. Kennedy — Issues and Options for Congress*, by Ronald O'Rourke.

Table 2. Navy FY2008-FY2013 Ship-Procurement Plan

(Ships funded in FY2007 shown for reference)

	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Total FY08-FY13
CVN-21		1				1		2
SSN-774	1	1	1	1	1	2	2	8
CG(X)					1		1	2
DDG-1000	2[a]	0[a]	1	1	1	1	1	5
LCS	2[b]	3[b]	6[b]	6	6	6	5	32[b]
LPD-17		1						1
LHA(R)	1							0
TAKE	1	1						1
MPF(F) TAKE			1	1	1			3
MPF(F) LHA(R)				1			1	2
MPF(F) LMSR				1	1	1		3
MPF(F) MLP			1		1		1	3
TATF							1	1
JCC(X)						1		1
JHSV			1	1	1			3
Total	7[b]	7[b]	11[b]	12	13	12	12	67[b]
Subtotal larger ships (i.e., ships other than LCSs)	5	4	5	6	7	6	7	35

Source: Navy FY2008 budget submission.

Key: CVN-21 = Ford (CVN-21) class nuclear-powered aircraft carrier. **SSN-774** = Virginia (SSN-774) class nuclear-powered attack submarine. **CG(X)** = CG(X) class cruiser. **DDG-1000** = Zumwalt (DDG-1000) class destroyer. CG(X) = CG(X) class cruiser. **LCS** = Littoral Combat Ship. **LPD-17** = San Antonio (LPD-17) class amphibious ship. **LHA(R)** = LHA(R) class amphibious assault ship. **TAKE** =Lewis and Clark (TAKE-1) class resupply ship. **TAKE-MPF(F)** = Modified TAKE intended for MPF(F) squadron. **MPF(F) LHR(A) (also called MPF(F) Aviation)** = Modified LHA(R) intended for MPF(F) squadron. **LMSR-MPF(F)** = Modified large, medium-speed, roll-on/roll-off (LMSR) sealift ship intended for MPF(F) squadron. **MLP-MPF(F)** = Mobile Landing Platform ship intended for MPF(F) squadron. **TATF** = oceangoing fleet tug. **JCC(X)** = Joint command and control ship. **JHSV** = Joint High-Speed Vessel.

a. DDG-1000s procured in FY2007 using split-funding (i.e., incrementally funding) in FY2007 and FY2008.

b. In March 2008, after the Navy submitted its FY2008 budget to Congress, the Navy announced a proposed plan for restructuring the LCS program that would change the numbers of LCSs in FY2007, FY2008, and FY2009 from 2, 3, and 6, respectively, to 0, 2, and 3, respectively. This proposal, if implemented, would alter the figures for the LCS program in those years, as well as the totals in the table that include these figures.

30-Year (FY2008-FY2037) Shipbuilding Plan. **Table 3** below shows the Navy's 30-year (FY2008-FY2037) ship-procurement plan.

Table 3. Navy 30-Year (FY2008-FY2037) Shipbuilding Plan

(including FY2008-FY2013 FYDP)

FY	Ship type (see key below)											
	CVN	SC	LCS	SSN	SSGN	SSBN	EWS	CLF	MIW	MPF(F)	Supt	TOTAL
08	1	0[a]	3[b]	1			1	1				**7**
09		1	6[b]	1						2	1	**11**
10		1	6	1						3	1	**12**
11		2	6	1						3	1	**13**
12	1	1	6	2						1	1	**12**
13		2	5	2						2	1	**12**
14		1	6	2							1	**10**
15		2	6	2							2	**12**
16	1	2	5	2							1	**11**
17		2		2			1				1	**6**
18		2		2			1	1				**6**
19		2		2		1						**5**
20		2		2			1	2			2	**9**
21	1	2		2			1	2				**8**
22		2		2		1	1	2			2	**10**
23		1		2			2	2			3	**10**
24		2		2		1	1	2			2	**10**
25	1	3		2		1	1	2			1	**11**
26		3		2		1	2	2				**10**
27		3		2		1	1					**7**
28		3		2		1	1					**7**
29	1	3		1		1	2				1	**9**
30		3	1	2		1	1				1	**9**
31		3	2	1		1	1				1	**9**
32		3	3	2		1	1					**10**
33		3	4	1		1						**9**
34	1	3	6	2		1						**13**
35		3	6	1		1	1					**12**
36		3	6	2								**11**
37		3	6	1								**10**

Source: *Report to Congress on 1Annual Long-Range Plan for Construction of Naval Vessels for FY 2008*, p. 6.

a Two ships procured in FY2007 using split-funding (i.e., incremental funding) in FY2007 and FY2008.

b In March 2008, after the Navy submitted its FY2008 budget to Congress, the Navy announced a proposed plan for restructuring the LCS program that would change the numbers of LCSs in FY2007, FY2008, and FY2009 from 2, 3, and 6, respectively, to 0, 2, and 3, respectively. This proposal, if implemented, would alter the figures for the LCS program in those years. The Navy has stated that it still plans to procure a total of 55 LCSs, suggesting that if the Navy's restructuring proposal is approved, the LCSs eliminated from FY2007-FY2009 wold be added back in other years.

Key: **FY** = Fiscal Year; **CVN** = aircraft carriers; **SC** = surface combatants (i.e., cruisers and destroyers); **LCS** = Littoral Combat Ships; **SSN** = attack submarines; **SSGN** = cruise missile submarines; **SSBN** = ballistic missile submarines; **EWS** = expeditionary warfare (i.e., amphibious) ships; **CLF** = combat logistics force (i.e., resupply) ships; **MIW** = mine warfare ships; **MPF(F)** = Maritime Prepositioning Force (Future) ships; **Supt** = support ships.

Oversight Issues for Congress

OSD Support for 313-Ship Proposal

Does the Office of the Secretary of Defense (OSD) support the 313-ship proposal?

The final report on DOD's 2005 Quadrennial Defense Review (QDR), released on February 3, 2006, suggests that the Office of the Secretary of Defense (OSD) supports a Navy with 11 carrier strike groups and more than 281 ships, but not necessarily the Navy's proposed 313-ship fleet, including the Navy's proposed subtotals for ship types other than aircraft carriers. Specifically, the report states that DOD will "Build a larger fleet that includes 11 Carrier Strike Groups...."[7] The Navy as of early-February 2006 included 281 ships. The report specifically mentions force-structure goals for several parts of DOD,[8] but does not mention the Navy's 313-ship proposal or force-level goals for any ships other than aircraft carriers.[9]

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[7] U.S. Department of Defense. *Quadrennial Defense Review Report*. Washington, 2006. (February 6, 2006) p. 48.

[8] The report mentions specific force-structure goals for Army brigades (page 43), Army end strength (page 43), Marine Corps end strength (page 43), special force battalions (page 44; these are to be increased by one-third); psychological operations and civil affairs units (page45; these are to be increased by 3,500 personnel); the Air Force B-52 bomber force (page 46); Air Force combat wings (page 47); Air Force Minuteman III ballistic missiles (page 50); and Air Force inter-theater airlift aircraft (page 54).

[9] The report also states that based on a series of analyses, DOD

> concluded that the size of today's forces — both the Active and Reserve Components across all four Military Departments — is appropriate to meet current and projected operational demands. At the same time, these analyses highlighted the need to continue re-balancing the mix of joint capabilities and forces.
>
> (*Quadrennial Defense Review Report*, op cit, p. 41.)

Regarding the reference to "today's forces," the Navy, as mentioned earlier, included a total of 281 ships as of early-February 2006.

The QDR report also states that

> policy decisions, such as mobilization policies and war aims, may change over time and have implications for the shape and size of U.S. forces. Finally, as part of a process of continuous reassessment and improvement, this wartime construct will be further developed over time to differentiate among the Military Departments as to how they should best size and shape their unique force structures, for use by the Combatant Commanders, since all parts of the construct do not apply equally to all capability portfolios.
>
> (*Quadrennial Defense Review Report*, op cit, pp. 38-39.)

Appropriateness of 313-Ship Proposal

Does the 313-ship proposal include appropriate numbers of ships?

Number of Aircraft Carriers. Some observers have questioned whether the Navy's proposed total of 11 aircraft carriers through FY2018 will be sufficient, particularly in light of past Navy plans that have called for 12 carriers, the Navy's statements since late-March 2007 that the 313-ship proposal includes a requirement for an eventual total of 12 carriers, and Navy plans to increase the carrier force back to 12 ships in 2019 and maintain it at that level thereafter. The latter two points, they argue, suggest that the Navy would actually prefer to have 12 carriers between now and FY2019, rather than 11.

Observers have also expressed concern that the current carrier force of 11 ships will temporarily decline further, to 10 ships, during the 33-month period between the scheduled retirement of the carrier Enterprise (CVN-65) in November 2012 and scheduled the entry into service of its replacement, the carrier Gerald R. Ford (CVN-78), in September 2015. Even if an 11-carrier force is adequate, these observers argue, a 10-carrier force might not be, even if only for a 33-month period.

10 USC §5062 requires the Navy to maintain an aircraft carrier force of at least 11 operational ships. The Navy for FY2008 is requesting a legislative waiver from Congress that would permit the Navy to reduce the carrier force to 10 operational ships for the 33-month between the retirement of the Enterprise and the entry into service of the Ford.

Number of Attack Submarines. Some observers have questioned whether the Navy's proposed total of 48 attack submarines will be sufficient, and have suggested that a total of 55 or more would be more appropriate, particularly in light of requests for forward-deployed attack submarines from U.S. regional military commanders, and the modernization of China's naval forces, including its submarine force. The issue is discussed in more detail other CRS reports.[10]

Number of Amphibious Ships. Some observers have questioned whether the Navy's proposed total of 31 amphibious ships will be sufficient. The Marine Corps in 2007 has suggested in testimony that a total of 33 would be more appropriate, on the grounds that 33 are needed meet the Marine Corps' requirement for having 30 operationally available amphibious ships (i.e., ships not in overhaul) at any one time, and since the requirement for 30 operational ships itself represents a reduction from a desired Marine Corps total of 34 operational ships. The issue is discussed in more detail in another CRS report.[11]

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[10] CRS Report RL32418, *Navy Attack Submarine Force-Level Goal and Procurement Rate: Background and Issues for Congress*, by Ronald O'Rourke; and CRS Report RL33153, *China Naval Modernization: Implications for U.S. Navy Capabilities — Background and Issues for Congress*, by Ronald O'Rourke.

[11] CRS Report RL32513, *Navy-Marine Corps Amphibious and Maritime Prepositioning Ship Programs: Background and Oversight Issues for Congress*, by Ronald O'Rourke.

For additional discussion of the appropriateness of the total number of ships (313) being proposed by the Navy, see **Appendix A**.

Adequacy of Shipbuilding Plans for Maintaining 313 Ships

Do the Navy's shipbuilding plans adequately support the 313-ship proposal?

The Navy's 30-year shipbuilding plan does not include enough ships to fully support all elements of the 313-ship fleet consistently over the long run.

Total Number of Ships. The Navy projects that its 30-year (FY2008-FY2037) shipbuilding plan, if fully implemented, would be sufficient to achieve and maintain a fleet of at least 313 ships between FY2016 and FY2025, but would not be sufficient to maintain a fleet of at least 313 ships in FY2026 and subsequent years.

Table 4 shows the Navy's projection of future force levels that would result from fully implementing the Navy's 30-year shipbuilding plan. As can be seen in the table, the Navy projects that the fleet would increase to 314 ships in FY2016, peak at 329 ships in FY2018-FY2019, and then decline to less than 313 ships in FY2026 and subsequent years, reaching a minimum of 294 ships in FY2031-FY2032.

By Specific Ship Type.

Summary. Long-term insufficiencies in the Navy's 30-year shipbuilding plan relative to the proposed 313-ship fleet include one LPD-17, four SSGNs, eight SSNs, 10 cruisers and destroyers, and the timing of some of the replacement SSBNs.

Aircraft Carriers. As mentioned earlier, the Navy projects that the carrier force will drop from the current figure of 11 ships to 10 ships for a 33-month period between the scheduled retirement of the carrier Enterprise (CVN-65) in November 2012 and scheduled the entry into service of its replacement, the carrier Gerald R. Ford (CVN-78), in September 2015. The Navy projects that the force will increase to 12 carriers starting in FY2019, when CVN-79 is commissioned. The Navy could keep the carrier force at 11 ships in FY2019 and subsequent years by accelerating the retirement of an existing carrier.

As mentioned earlier, 10 USC §5062 requires the Navy to maintain an aircraft carrier force of at least 11 operational ships, and the Navy for FY2008 is requesting a legislative waiver from Congress that would permit the Navy to reduce the carrier force to 10 operational ships for the 33-month between the retirement of the Enterprise and the entry into service of the Ford.

Ballistic Missile Submarines (SSBNs). The 313-ship plan calls for a total of 14 SSBNs, and the 30-year shipbuilding plan includes a total of 14 replacement SSBNs procured between FY2019 and FY2035. The 14 replacement ships, however, are not procured on a schedule that would permit a timely one-for-one replacement for some of the 14 existing SSBNs. As a result, the Navy projects that the SSBN force will drop to 13 ships in FY2027, and to 12 ships in 2030. The Navy projects that the force would remain at 12 ships through FY2037. Accelerating the procurement of some of the SSBNs to earlier years would permit the SSBN force to

remain at a steady level of 14 ships while existing ships were replaced by new ones. As discussed earlier, the Navy has suggested that the required number of SSBNs may be reduced from 14 to 12.

Table 4. Navy Projection of Future Force Levels

(resulting from implementation of 30-year shipbuilding plan shown in Table 3)

FY	Ship type (see key below)											
	CVN	SC	LCS	SSN	SSGN	SSBN	EWS	CLF	MIW	MPF(F)	Supt	TOTAL
08	11	107	4	52	4	14	32	31	14	0	17	**286**
09	11	109	6	53	4	14	31	30	14	0	17	**289**
10	11	111	9	52	4	14	31	30	14	0	17	**293**
11	11	113	15	52	4	14	32	30	14	0	17	**302**
12	11	112	21	53	4	14	33	29	14	1	18	**310**
13	10	106	27	54	4	14	32	29	14	2	19	**311**
14	10	99	33	51	4	14	31	30	14	3	18	**307**
15	11	93	38	51	4	14	30	30	14	8	18	**311**
16	11	91	44	49	4	14	30	30	14	9	18	**314**
17	11	92	50	49	4	14	30	30	13	10	19	**322**
18	11	93	55	48	4	14	30	30	13	11	20	**329**
19	12	93	55	49	4	14	30	30	11	11	20	**329**
20	12	94	55	47	4	14	30	30	10	11	21	**328**
21	12	95	55	47	4	14	30	30	7	11	21	**326**
22	12	94	55	46	4	14	30	30	6	12	21	**324**
23	12	94	55	46	4	14	30	30	2	12	22	**321**
24	12	94	55	45	4	14	30	30	1	12	22	**319**
25	12	93	55	44	4	14	30	30	0	12	20	**314**
26	12	90	55	43	2	14	30	30	0	12	20	**306**
27	12	90	55	42	1	13	30	30	0	12	21	**306**
28	12	87	55	40	0	13	30	30	0	12	21	**300**
29	12	85	55	40	0	13	30	30	0	12	21	**298**
30	12	83	55	41	0	12	30	30	0	12	21	**296**
31	12	80	55	43	0	12	30	30	0	12	20	**294**
32	12	79	55	44	0	12	30	30	0	12	20	**294**
33	12	79	55	46	0	12	30	30	0	12	20	**296**
34	12	78	55	48	0	12	30	30	0	12	20	**297**
35	12	79	56	49	0	12	30	30	0	12	20	**300**
36	12	80	56	51	0	12	30	30	0	12	20	**303**
37	12	79	56	52	0	12	30	30	0	12	20	**303**

Source: *Report to Congress on Annual Long-Range Plan for Construction of Naval Vessels for FY 2007*.

Key: **FY** = Fiscal Year; **CVN** = aircraft carriers; **SC** = surface combatants (i.e., cruisers and destroyers); **LCS** = Littoral Combat Ships; **SSN** = attack submarines; **SSGN** = cruise missile submarines; **SSBN** = ballistic missile submarines; **EWS** = expeditionary warfare (i.e., amphibious) ships; **CLF** = combat logistics force (i.e., resupply) ships; **MIW** = mine warfare ships; **MPF(F)** = Maritime Prepositioning Force (Future) ships; **Supt** = support ships.

Converted Trident Submarines (SSGNs). Although the 313-ship plan calls for a total of four SSGNs, the 30-year shipbuilding plan includes no replacements for the four current SSGNs, which the Navy projects will reach retirement age and leave service in FY2026-FY2028.

Attack Submarines (SSNs). Although the 313-ship plan calls for a total of 48 SSNs, the 30-year shipbuilding plan does not include enough SSNs to maintain a force of 48 boats consistently over the long run. The Navy projects that the SSN force will drop below 48 boats in 2020, reach a minimum of 40 boats (17% less than the required figure of 48) in FY2028 and FY2029, and remain below 48 boats through 2033. The Navy has completed a study on various options for mitigating the projected SSN shortfall. One of these options is to procure one or more additional SSNs in the period FY2008-FY2011. Some Members have expressed support for this option. The issue is discussed in more detail in another CRS report.[12]

Cruisers and Destroyers. Although the 313-ship plan calls for a total of 88 cruisers and destroyers, the 30-year shipbuilding plan does not include enough cruisers and destroyers to maintain a force of 88 ships consistently over the long run. The Navy projects that the cruiser-destroyer force will drop below 88 ships in FY2028, reach a minimum of 78 ships (11% less than the required figure of 88) in FY2034, and remain below 88 through FY2037. Maintaining a force of 88 cruisers and destroyers consistently over the long run would require adding 10 cruisers and destroyers to the 30-year shipbuilding plan by about FY2029.

Amphibious Ships. Although the 313-ship plan calls for a total of 31 amphibious ships, the Navy projects that the force will drop to 30 ships in FY2015, and remain there through FY2037. Although the requirement for 31 amphibious ships includes a total of 10 LPD-17s, the FY2008-FY2013 shipbuilding plan ends procurement of LPD-17s with the procurement of a ninth ship in FY2008. A tenth LPD-17 is the top item on the Navy's FY2008 unfunded programs list (also called the unfunded requirements list) — the list of items the Navy would like to fund in FY2008 if funding were added to the Navy's FY2008 budget.

Affordability and Executibility of Shipbuilding Plans

Are the Navy's shipbuilding plans affordable and executable?

The Navy says that for its shipbuilding plans to be affordable and executable, five things need to happen:

- The Navy's overall budget needs to remain more or less flat (not decline) in real (inflation-adjusted) terms;
- Navy Operation and Maintenance (O&M) spending needs to remain flat (not grow) in real terms;

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[12] CRS Report RL32418, *Navy Attack Submarine Force-Level Goal and Procurement Rate: Background and Issues for Congress*, by Ronald O'Rourke.

- Navy Military Personnel (MilPer) spending needs to remain flat (not grow) in real terms;

- Navy research and development (R&D) spending needs to decrease from recent levels and remain at the decreased level over the long run; and

- Navy ships need to be built at the Navy's currently estimated prices.

The Navy says the first four things are needed for the Navy to be able to increase the shipbuilding budget from an average in FY2002-FY2007 of about $9.6 billion per year in constant FY2008 dollars to a long-term average of about $15.4 billion per year in constant FY2008 dollars — an increase of about 60% in real terms.[13]

Some observers have questioned whether all five of the above things will happen, arguing the following:

- The need in coming years to fund an increase in Army and Marine end strength could, within an overall DOD budget that remains more or less flat in real terms, require funding to be transferred from the Air Force and Navy budgets to the Army and Marine Corps budgets, which could, for a time at least, lead to a real decline in the Air Force and Navy budgets.

- DOD in the past has not been fully successful in meeting its goals for controlling O&M costs.

- The Navy does not have full control over its MilPer costs — they can be affected, for example, by decisions that Congress makes on pay and benefits.

- While Navy may be able to decrease R&D spending in coming years as a number of new systems shift from development to procurement, it may be difficult for the Navy to keep R&D spending at that reduced level over the long run, because the Navy at some point will likely want to start development of other new systems.

- Several Navy shipbuilding programs have experienced significant cost growth in recent years, and CBO estimates that Navy ships will cost substantially more to build than the Navy estimates.

If one or more of the five required things listed above does not happen, it might become difficult or impossible to execute the Navy's shipbuilding plans. The risk

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[13] Source: CBO telephone conversation with CRS, May 31, 2006. See also Statement of J. Michael Gilmore, Assistant Director, and Eric J. Labs, Principal Analyst, [On] Potential Costs of the Navy's 2006 Shipbuilding Plan, [Testimony] before the Subcommittee on Projection Forces Committee on Armed Services U.S. House of Representatives, March 30, 2006.

of the plan becoming unexecutable may become particularly acute after FY2011, when the Navy plans to increase annual procurement from 1 destroyer and 1 submarine per year to more than 1 cruiser and destroyer and 2 submarines per year.

Regarding the fifth item on the list above, CBO estimates, as shown in **Table 5**, that the Navy's shipbuilding plan could cost an average of about $20.6 billion per year in constant FY2008 dollars to execute — about 34% more than the Navy estimates. If aircraft carrier refueling overhauls are also included in the calculation, CBO's estimated cost ($21.7 billion per year in constant FY2008 dollars) is about 32% higher than the Navy's estimate ($16.5 billion in constant FY2008 dollars). The table also shows that if the 30-year shipbuilding plan is augmented to include the extra ships needed to fully support all elements of the 313-ship plan over the long run (see discussion in previous section), CBO estimates the average annual cost at $21.9 billion per year excluding carrier refueling overhauls, and $22.9 billion per year including carrier refueling overhauls, both figures in constant FY2008 dollars.

Table 5. Average Annual Shipbuilding Costs

(Billions of constant FY2008 dollars per year)

	New-construction ships only	New-construction ships + carrier refueling overhauls
Navy shipbuilding budget in FY2002-FY2007	9.6	11.4
Navy estimate of cost of 30-year plan	15.4	16.5
CBO estimate of cost of 30-year plan	20.6	21.7
CBO estimate of cost of 30-year plan plus additional ships needed to fully support all elements of 313-ship fleet consistently over the long run	21.9	22.9

Source: Congressional Budget Office, *Resource Implications of the Navy's Fiscal Year 2008 Shipbuilding Plan*, March 23, 2007, Table 2 on p. 8.

As shown in **Table 6**, CBO in 2006 estimated that if the Navy in coming years does not receive or cannot devote more budgetary resources to ship construction, and if the Navy retains roughly the same proportionate mix of ship types as called for in the 313-ship proposal, the fleet could eventually be reduced to a total of 211 ships, or about 33% fewer than called for in the 313-ship proposal.

Table 6. CBO Estimate of Potential Fleet Size

Ship type	Proposed 313-ship fleet	CBO Estimate
Ballistic missile submarines (SSBNs)	14	10
Cruise missile submarines (SSGNs)	4	0
Attack submarines (SSNs)	48	35
Aircraft carriers	11	7
Cruisers, destroyers, frigates	88	54
Littoral Combat Ships (LCSs)	55	40
Amphibious ships	31	15
MPF(F) ships	12	12
Combat logistics and support ships	50	38
Total battle force ships	**313**	**211**

Sources: Congressional Budget Office, *Options for the Navy's Future Fleet*, May 2006, pp. xviii-xx.

Adequacy of Shipbuilding Plans for Industrial Base

Do the Navy's shipbuilding plans adequately support the shipbuilding industrial base?

Larger Ships in General. Although the total number of ships to be procured under the Navy's FY2008-FY2013 shipbuilding plan increases from 7 ships per year in FY2008 to 11 ships in FY2009 and 12 or 13 ships per year in FY2010-FYFY2013, much of this increase is due the planned increase in the number of LCSs procured each year. When the LCSs are set aside, the total number of larger ships to be procured grows from four in FY2008 to five in FY2009 and six or seven per year in FY2010-FY2013.

As shown in **Table 2**, the Navy's FY2007-FY2011 plan includes a total of 35 larger ships (i.e., ships other than LCSs), or an average of about 5.8 larger ships per year. This average rate, if implemented, would be similar to rate of procurement that has been maintained for larger ships since the early 1990s (see **Appendix B**). Consequently, for the six yards that build the Navy's larger ships, the Navy's FY2007-FY2011 shipbuilding plan would, if implemented, result in a continuation, more or less, of the relatively low workloads and employment levels these yards have experienced in recent years.

Submarines.

Submarine Construction. The Navy is planning to increase the SSN procurement rate from the current one ship per year to two ships per year starting in FY2012. The submarine industrial base could execute an increase to two ships per year by an earlier date, although the construction times for the additional boat or boats procured might be somewhat longer than usual.

Submarine Design and Engineering. Navy and industry officials are concerned about the future of the submarine design and engineering base, which

currently faces the prospect, for the first time in about 50 years, of not having a new submarine design project on which to work. Since many of the design and engineering skills needed for submarines are not exercised fully, or at all, through the design of surface ships, attempting to maintain the submarine design and engineering base by giving it surface-ship design work is viewed by Navy and industry officials as a risky approach. This view has been reinforced by the recent experience of the United Kingdom, which attempted unsuccessfully to maintain its submarine design and engineering base by giving it surface-ship design work. The UK later experienced substantial difficulties in its subsequent Astute-class SSN design and engineering effort. These difficulties were substantial enough that employees from GD/EB's design and engineering staff were used to help overcome problems in the Astute-class effort.

Options for additional work for the submarine design and engineering base over the next few years include the following:

- **Expanded Virginia-class modification effort.** The Navy is currently funding certain work to modify the Virginia-class design, in part to reach the Navy's Virginia-class cost-reduction target. The scope of this effort could be expanded to include a greater number and variety of modifications. An expanded modification effort would add to the amount of submarine design and engineering work currently programmed, but by itself might not be sufficient in terms of volume of work or number of skills areas engaged to fully preserve the submarine design and engineering base.

- **New Advanced SEAL Delivery System (ASDS).** The ASDS is a mini-submarine that is attached to the back of an SSGN or SSN to support operations by Navy special operations forces (SOF), who are called SEALs, an acronym that stands for Sea, Air, and Land. DOD has decided, after building one copy of the current ASDS design, not to put that design into serial production. Some observers have proposed developing a new ASDS design with the intention of putting this new design into serial production. This option, like the previous one, would add to the amount of submarine design and engineering work currently programmed, but by itself might not be sufficient in terms of volume of work or number of skills areas engaged to fully preserve the submarine design and engineering base.

- **Diesel-electric submarine for Taiwan.** In April 2001, the Bush Administration announced a proposed arms-sales package for Taiwan that included, among other things, eight diesel-electric submarines.[14] Since foreign countries that build diesel-electric submarines appear reluctant to make their designs available for a program to build such boats for Taiwan, some observers have

[14] For more on the proposed arms sales package, including the diesel-electric submarines, see CRS Report RL30957, *Taiwan: Major U.S. Arms Sales Since 1990*, by Shirley A. Kan.

proposed that the United States develop its own design for this purpose. This option would generate a substantial volume of work and engage many skill areas. Uncertainty over whether and when this project might occur could make it difficult to confidently incorporate it into an integrated schedule of work for preserving the U.S. design and engineering base. Although the project would engage many skill areas, it might not engage all of them. Skills related to the design of nuclear propulsion plants, for example, might not be engaged. In addition, this project might raise concerns regarding the potential for unintended transfer of sensitive U.S. submarine technology — an issue that has been cited by the Navy in the past for not supporting the idea of designing and building diesel-electric submarines in the United States for sale to foreign buyers.[15]

- **New SSN design**. Developing a completely new SSN design as the successor to the Virginia-class design would fully support the design and engineering base for several years. The Navy in the past has estimated that the cost of this option would be roughly equivalent to the procurement cost of three SSNs. The House version of the FY2006 defense authorization bill (H.R. 1815) proposed this idea, but the idea was not supported by the Navy, in large part because of its cost, and the conference version of the bill did not mandate it.

- **Accelerated start of next SSBN design.** Given the ages of the Navy's 14 current SSBNs, work on a replacement SSBN design would normally not need to start for several years. The start of this project, however, could be accelerated to FY2008. The project could then be carried out as a steady-state effort over several years, rather than as a more-concentrated effort starting several years from now. This option could provide a significant amount of submarine design and engineering work for several years, and could engage all submarine design and engineering skills. The total cost of this effort would be comparable to that of the previous option of designing a new SSN, but this option would accelerate a cost that the Navy already plans to incur, whereas the option for designing a new SSN would be an additional cost.

The Navy has acknowledged the need to devise a strategy to preserve the submarine design and engineering base, and asked the RAND Corporation to study the issue. The RAND report states that, based on RAND's analysis,

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[15] An additional issue that some observers believe might be behind Navy resistance to the idea of designing and building diesel-electric submarines in the United States for sale to foreign buyers, but which these observers believe the Navy is unwilling to state publicly, is a purported fear among Navy officials that the establishment of a U.S. production line for such boats would lead to political pressure for the Navy to accept the procurement of such boats for its own use, perhaps in lieu of nuclear-powered submarines. The Navy argues that non-nuclear-powered submarines are not well suited for U.S. submarine operations, which typically involve long, stealthy transits to the operating area, long submerged periods in the operating area, and long, stealthy transits back to home port.

we reach the following recommendations:

— Seriously consider starting the design of the next submarine class by 2009, to run 20 years, taking into account the substantial advantages and disadvantages involved.

If the 20-year-design alternative survives further evaluation, the issue of a gap in submarine design is resolved, and no further actions need be taken. If that alternative is judged too risky, we recommend the following:

— Thoroughly and critically evaluate the degree to which options such as the spiral development of the Virginia class or design without construction will be able to substitute for new-submarine design in allowing design professionals to retain their skills.

If options to sustain design personnel in excess of demand are judged on balance to offer clear advantages over letting the workforce erode, then the Navy should take the following actions:

— Request sufficient funding to sustain excess design workforces at the shipyards large enough to permit substantial savings in time and money later.

— Taking into account trends affecting the evolution of critical skills, continue efforts to determine which shipyard skills need action to preserve them within the sustained design core.

— Conduct a comprehensive analysis of vendors to the shipyards to determine which require intervention to preserve critical skills.

— Invest $30 million to $35 million annually in the NSWC's Carderock Division submarine design workforce in excess of reimbursable demand to sustain skills that might otherwise be lost.[16]

Cruisers and Destroyers. The 30-year shipbuilding plan calls for procuring an average of about 1.5 DDG-1000s/CG(X)s over the next 17 years. The light-ship displacement of the DDG-1000 (about 12,435 tons) is about 79% greater than that of the DDG-51 Flight IIA design (about 6,950 tons). If shipyard construction work for these two ship classes is roughly proportional to their light-ship displacements, and if the CG(X) is about the same size as the DDG-1000, then procuring an average of 1.5 DDG-1000s/CG(X)s per year might provide an amount of shipyard work equivalent to procuring about 2.7 DDG-51s per year. Splitting this work evenly between the two yards that build larger surface combatants — General Dynamics's Bath Iron Works (GD/BIW) of Bath, ME, and the Ingalls shipyard of Pascagoula, MS, that forms parts of Northrop Grumman Ship Systems (NGSS) — might thus provide each yard with the work equivalent of about 1.35 DDG-51s per year.

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[16] John F. Schank, et al, *Sustaining U.S. Submarine Design Capabilities*, RAND, Santa Monica (CA), 2007. pp. xxvii-xxviii. (Prepublication copy posted on the Internet by RAND, accessed on May 9, 2007, at [http://www.rand.org/pubs/monographs/2007/RAND_MG608.pdf].)

Supporters of these two yards argued in the 1990s that a total of 3 DDG-51s per year (i.e., an average of 1.5 DDG-51s per year for each yard), in conjunction with other work being performed at the two yards (particularly Ingalls), was the minimum rate needed to maintain the financial health of the two yards.[17] Navy officials in recent years have questioned whether this figure is still valid. Building the equivalent of about 2.7 DDG-51s per year equates to about 90% of this rate.

If GD/BIW were to build the second and fourth DDG-1000s, then the rather lengthy interval between GD/BIW's first ship (to be procured in FY2007) and its second ship (to be procured in FY2010) could reduce GD/BIW's ability to efficiently shift production from one ship to the next.

If affordability considerations limit DDG-1000/CG(X) procurement to one ship per year in FY2011 and subsequent years, the workload for the cruiser-destroyer industrial base in those years would be reduced substantially from levels that would be achieved under the Navy's 30-year plan. Procuring one DDG-1000/CG(X) per year might provide an amount of shipyard work equivalent to procuring about 1.8 DDG-51s per year, and splitting this work evenly between GD/BIW and Ingalls might provide each yard with the work equivalent of about 0.9 DDG-51s per year, which would be equivalent to 60% of the rate cited in the 1990s by supporters of the two shipyards as the minimum needed to maintain the financial health of the two yards.

LPD-17 Class Ships Amphibious Ships. The Navy's 30-year shipbuilding plan shows a 10-year gap between the ninth LPD-17, to be procured in FY2008, and the first ship in the LSD(X) class (a broadly similar type of amphibious ship) in FY2018. LPD- and LSD-type ships in recent years have been built primarily at the Avondale shipyard near New Orleans, LA, that forms part of Northrop Grumman Ship Systems (NGSS).

FY2008 Legislative Activity

FY2008 Defense Authorization Bill (H.R. 1585)

House. The House Armed Services Committee, in its report (H.Rept. 110-146 of May 11, 2007) on the FY2008 defense authorization bill (H.R. 1585), recommended funding for procuring an additional LPD-17 amphibious ship and an additional TAKE-1 class dry cargo ship. The report also recommended advance procurement funding for long-leadtime components for a Virginia-class attack submarine, to facilitate the option of procuring an additional Virginia-class boat prior to FY2012. The committee's report states that "The committee took steps to reverse the decline in the Navy's fleet by adding funding for construction of three ships." (Page 17) The report also states:

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[17] See, for example, CRS Report 94-343, *Navy DDG-51 Destroyer Procurement Rate: Issues and Options for Congress*, by Ronald O'Rourke, April 1994, pp. 59-62 (out of print, available from author).

The proposed 55 ship class [of Littoral Combat Ships] represents a significant portion of the Chief of Naval Operations plan for a 313 ship Navy. If the Secretary cannot maintain affordability in this vital program, the 313 ship fleet cannot be realized. The committee believes it is imperative that the Navy pursue all reasonable means to control costs in the LCS program. (Page 78)

The report also states:

The committee is aware of the Navy requirement for a force of 48 fast attack submarines, and that the Navy will fall short of that number after the year 2020 under the current shipbuilding plan. The committee is committed to increasing the procurement of Virginia class submarines to two per year prior to the Navy's current plan of increased procurement in fiscal year 2012. The [committee's recommended] addition of advance procurement for construction of long-lead items such as reactor plant and main propulsion components allows the committee the flexibility to increase the procurement rate of submarines in the coming years. (Page 80)

The report also states:

Premature retirement of Navy vessels

The committee remains concerned that vessels of the U.S. Navy are being retired prior to the end of useful service life. The committee understands that over the past two decades a significant percentage of the capital ships of the Navy have been retired based on cost avoidance decisions for modernization of surface combatants or refueling of submarines.

The committee notes that those decisions have resulted in a current fleet of less than 280 capital ships. The committee strongly believes that future Navy ship classes should be designed and constructed to allow for cost effective upgrades to the ships sensors, communications, and weapons systems as new technologies become available.

The committee directs the Secretary of the Navy to submit a report to the congressional defense committees by October 1, 2007, detailing the vessels that the Navy expects to retire between October 1, 2007, and September 30, 2012, which will not have reached the end of useful service life. This report shall specify why it is in the best interest of the nation to retire any such vessel prior to the end of its useful service life. For the purposes of this report, "useful service life" shall be defined as the projected hull life of the ship class. Additionally, this report shall include the Navy's strategy for future design and construction to ensure that capital ships can be upgraded economically, and are not retired prematurely. (Page 79)

Appendix A. Additional Discussion on Appropriateness of 313-Ship Fleet

Historical Fleet Size and Previous Force Plans. One possible method for assessing the appropriateness of the total number of ships being proposed by the Navy is to compare that number to historical figures for total fleet size. Historical figures for total fleet size, however, might not be a reliable yardstick for assessing the appropriateness of the Navy's proposed 313-ship fleet, particularly if the historical figures are more than a few years old, because the missions to be performed by the Navy, the mix of ships that make up the Navy, and the technologies that are available to Navy ships for performing missions all change over time.

The Navy, for example, reached a late-Cold War peak of 568 battle force ships at the end of FY1987,[18] and as of May 22, 2005 had declined to a total of 282 battle force ships. The FY1987 fleet, however, was intended to meet a set of mission requirements that focused on countering Soviet naval forces at sea during a potential multi-theater NATO-Warsaw Pact conflict, while the February 2006 fleet is intended to meet a considerably different set of mission requirements centered on influencing events ashore by countering both land- and sea-based military forces of potential regional threats other than Russia, including non-state terrorist organizations. In addition, the Navy of FY1987 differed substantially from the February 2006 fleet in areas such as profusion of precision-guided air-delivered weapons, numbers of Tomahawk-capable ships, and sophistication of C4ISR systems.[19]

In coming years, Navy missions may shift again, to include, as a possible example, a greater emphasis on being able to counter improved Chinese maritime military capabilities.[20] In addition, the capabilities of Navy ships will likely have changed further by that time due to developments such as more comprehensive implementation of networking technology and increased use of ship-based unmanned vehicles.

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[18] Some publications, such as those of the American Shipbuilding Association, have stated that the Navy reached a peak of 594 ships at the end of FY1987. This figure, however, is the total number of active ships in the fleet, which is not the same as the total number of battle force ships. The battle force ships figure is the number used in government discussions of the size of the Navy. In recent years, the total number of active ships has been larger than the total number of battle force ships. For example, the Naval Historical Center states that as of November 16, 2001, the Navy included a total of 337 active ships, while the Navy states that as of November 19, 2001, the Navy included a total of 317 battle force ships. Comparing the total number of active ships in one year to the total number of battle force ships in another year is thus an apple-to-oranges comparison that in this case overstates the decline since FY1987 in the number of ships in the Navy. As a general rule to avoid potential statistical distortions, comparisons of the number of ships in the Navy over time should use, whenever possible, a single counting method.

[19] C4ISR stands for command and control, communications, computers, intelligence, surveillance, and reconnaissance.

[20] For a discussion, see CRS Report RL33153, *China Naval Modernization: Implications for U.S. Navy Capabilities — Background and Issues for Congress*, by Ronald O'Rourke.

The 568-ship fleet of FY1987 may or may not have been capable of performing its stated missions; the 281-ship fleet of February 2006 may or nor may not be capable of performing its stated missions; and a fleet years from now with a certain number of ships may or may not be capable of performing its stated missions. Given changes over time in mission requirements, ship mixes, and technologies, however, these three issues are to a substantial degree independent of one another.

For similar reasons, trends over time in the total number of ships in the Navy are not necessarily a reliable indicator of the direction of change in the fleet's ability to perform its stated missions. An increasing number of ships in the fleet might not necessarily mean that the fleet's ability to perform its stated missions is increasing, because the fleet's mission requirements might be increasing more rapidly than ship numbers and average ship capability. Similarly, a decreasing number of ships in the fleet might not necessarily mean that the fleet's ability to perform stated missions is decreasing, because the fleet's mission requirements might be declining more rapidly than numbers of ships, or because average ship capability and the percentage of time that ships are in deployed locations might be increasing quickly enough to more than offset reductions in total ship numbers.

Previous Navy force structure plans, such as those shown in **Table 1**, might provide some insight into the potential adequacy of a proposed new force-structure plan, but changes over time in mission requirements, technologies available to ships for performing missions, and other force-planning factors suggest that some caution should be applied in using past force structure plans for this purpose, particularly if those past force structure plans are more than a few years old. The Reagan-era plan for a 600-ship Navy, for example, was designed for a Cold War set of missions focusing on countering Soviet naval forces at sea, which is not an appropriate basis for planning the Navy today.[21]

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[21] Navy force structure plans that predate those shown in **Table 1** include the Reagan-era 600-ship plan of the 1980s, the Base Force fleet of more than 400 ships planned during the final two years of the George H. W. Bush Administration, the 346-ship fleet from the Clinton Administration's 1993 Bottom-Up Review (or BUR, sometimes also called Base Force II), and the 310-ship fleet of the Clinton Administration's 1997 QDR. The table below summarizes some key features of these plans.

Features of Recent Navy Force Structure Plans

Plan	600-ship	Base Force	1993 BUR	1997 QDR
Total ships	~600	~450/416[a]	346	~305/310[b]
Attack submarines	100	80/~55[c]	45-55	50/55[d]
Aircraft carriers	15[f]	12	11+1[g]	11+1[g]
Surface combatants	242/228[h]	~150	~124	116
Amphibious ships	~75[i]	51[j]	36[j]	36[j]

Source: Prepared by CRS based on DOD and U.S. Navy data.

a. Commonly referred to as 450-ship plan, but called for decreasing to 416 ships by end of FY1999.

b. Original total of about 305 ships was increased to about 310 due to increase in number of attack submarines to 55 from 50.

(continued...)

Current Force-Planning Issues. Current force-planning issues that Congress may consider in assessing the appropriateness of the Navy's 313-ship proposal include the following:

- naval requirements for what the administration refers to as the global war on terrorism (GWOT) and for irregular conflicts such as insurgencies;
- naval requirements for countering improved Chinese maritime military forces;
- new technologies that may affect U.S. Navy ship capabilities;
- additional forward homeporting and the Sea Swap concept;
- DOD's increased emphasis on achieving full jointness in U.S. military plans and operations; and
- potential tradeoffs between funding Navy requirements and funding competing defense requirements.

Each of these is discussed briefly below.

Global War on Terrorism and Irregular Warfare. The potential effects of the GWOT and irregular conflicts such as insurgencies on requirements for U.S. ground forces have received much attention in recent months. The potential effects of these factors on requirements for U.S. naval forces has received somewhat less attention. In terms of ships, possible effects on requirements for U.S. naval forces include an increased emphasis on one or more of the following:

- ships (such as attack submarines, surface combatants, or aircraft carriers) that can conduct offshore surveillance of suspected terrorists and irregular military forces using either built-in sensors or embarked unmanned vehicles;

- ships (such as surface combatants, particularly smaller ones like the LCS) and smaller surface craft for conducting coastal patrol and intercept operations, including countering small boats and craft and countering pirate-like operations;[22]

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[21] (...continued)
c. Plan originally included 80 attack submarines, but this was later reduced to about 55.
d. Plan originally included 50 attack submarines but this was later increased to 55.
e. Plus two or four additional converted Trident cruise missile submarines (SSGNs) for the 2001 QDR plan and four additional SSGNs for the 375-ship proposal.
f. Plus one additional aircraft carrier in the service life extension program (SLEP).
g. Eleven active carriers plus one operational reserve carrier.
h. Plan originally included 242 surface combatants but this was later reduced to 228.
i. Number needed to lift assault echelons of one Marine Expeditionary Force (MEF) plus one Marine Expeditionary Brigade (MEB).
j. Number needed to lift assault echelons of 2.5 MEBs. Note how number needed to meet this goal changed from Base Force plan to the BUR plan — a result of new, larger amphibious ship designs.

[22] Coast Guard cutters may also be well suited for such operations.

- ships (such as attack submarines) for covertly inserting and recovering Navy special operations forces, known as SEALs;[23]

- ships (such as amphibious ships) for supporting smaller-scale Marine Corps operations ashore; and

- ships (such as aircraft carriers or large-deck amphibious assault ships) that can launch strike-fighters armed with smaller-scale precision guided weapons.

Although the primary stated missions of the LCS relate to defeating littoral anti-access forces of opposing countries rather than to countering terrorists, some observers view the inclusion of 55 LCSs in the Navy's proposed 313-ship fleet as evidence that the proposal is aimed in part at meeting operational demands associated with the Navy's role in the GWOT. Supporters of the Navy's planned MPF(F) squadron argue that this squadron could be valuable in sea-based counter-terrorist operations. In addition, the Navy in recent months has taken some actions that reflect a stated specific interest in increasing the Navy's role in the GWOT. Among these are the establishment of a Navy riverine force that is to consist of three squadrons of 12 boats each, and a total of about 700 personnel. These boats, as small craft, are not included in the Navy's proposed total of 313 ships.[24]

Chinese Maritime Military Forces. China's naval modernization has potential implications for required U.S. Navy capabilities in terms of preparing for a conflict in the Taiwan Strait area, maintaining U.S. Navy presence and military influence in the Western Pacific, and countering Chinese ballistic missile submarines. Preparing for a conflict in the Taiwan Strait area could place a premium on the following: on-station or early-arriving Navy forces, capabilities for defeating China's maritime anti-access forces, and capabilities for operating in an environment that could be characterized by information warfare and possibly electromagnetic pulse (EMP) and the use of nuclear weapons.

China's naval modernization raises potential issues concerning the size of the Navy; the Pacific Fleet's share of the Navy; forward homeporting of Navy ships in the Western Pacific; the number of aircraft carriers, submarines, and ASW-capable platforms; Navy missile defense, air-warfare, anti-air warfare (AAW), antisubmarine warfare (ASW), and mine warfare programs; Navy computer network security; and EMP hardening of Navy systems. Aircraft carriers, cruisers and destroyers, and attack submarines are viewed by some observers as ships that might be particularly appropriate for countering improved Chinese maritime military forces.[25]

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[23] SEAL stands for Sea, Air, and Land.

[24] For further discussion of the Navy's role in the GWOT, see CRS Report RS22373, *Navy Role in Global War on Terrorism (GWOT) — Background and Issues for Congress*, by Ronald O'Rourke.

[25] For further discussion, see CRS Report RL33153, *China Naval Modernization: Implications for U.S. Navy Capabilities — Background and Issues for Congress*, by Ronald O'Rourke.

New Technologies. New technologies that will likely affect the capabilities of Navy ships in coming years, and consequently the number of ships that may be needed to perform a given set of missions, include improved radars and other sensors (including miniaturized sensors); improved computers and networking systems; unmanned vehicles; reduced-size, precision-guided, air-delivered weapons; electromagnetic rail guns; directed-energy weapons (such as lasers); and integrated electric-drive propulsion technology, to name just a few. Historically, the effect of improving technology historically has often been to increase the capability of individual Navy ships and thereby permit a reduction in the number of Navy ships needed to perform a stated set of missions. However, some analysts believe that networking technology and reduced-sized sensors may argue in favor of a more distributed force structure that includes a larger number of smaller ships such as the LCS.

Forward Homeporting and Sea Swap. The Navy is considering transferring an aircraft carrier from the continental United States to either Hawaii or Guam and increasing the number of attack submarines homeported at Hawaii or Guam. The Navy has also experimented with the concept of deploying a Navy ship for an extended period of time (e.g., 12, 18, or 24 months, rather than the traditional deployment period of 6 months) and rotating successive crews out the ship every 6 months — a concept the Navy calls Sea Swap. Other things held equal, homeporting additional Navy ships in forward locations such as Guam and Hawaii, and applying the Sea Swap concept to a significant portion of the fleet, could reduce, perhaps substantially, the total number of Navy ships needed to maintain a certain number of Navy ships in overseas operating areas on a day-to-day basis. For some types of ships, additional forward homeporting and use of Sea Swap might reduce the number of ships needed for maintaining day-to-day forward deployments below the number needed for fighting conflicts. In such cases, fully implementing the force-level economies suggested by forward homeporting and Sea Swap could leave the Navy with inadequate forces for fighting conflicts.[26]

Jointness. DOD's increased emphasis on achieving increased jointness (i.e., coordination and integration of the military services) in U.S. military plans and operations could lead to reassessments of requirements for Navy capabilities that were originally determined in a less-joint setting. Areas where U.S. Navy capabilities overlap with the those of the Air Force or Army, and where total U.S. capabilities across the services exceed DOD requirements, might be viewed as candidates for such reassessments, while capabilities that are unique to the Navy might be viewed as less suitable for such reassessments. An example of a broad area shared by the Navy, Air Force, and Army is tactical aviation, while an example of an area that is usually regarded as unique to the Navy is antisubmarine warfare.

Competing Defense Priorities. A final issue to consider are the funding needs of other defense programs. In a situation of finite defense resources, funding certain Navy requirements may require not funding certain other defense priorities. If so, then the issue could become how to allocate finite resources so as to limit operational risk over the various missions involving both Navy and non-Navy mission requirements.

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[26] For additional discussion of Sea Swap, see CRS Report RS21338, *Navy Ship Deployments: New Approaches — Background and Issues for Congress*, by Ronald O'Rourke.

Appendix B. Size of Navy and Navy Shipbuilding Rate

The total number of battle force ships in the Navy reached a late-Cold War peak of 568 at the end of FY1987 and began declining thereafter.[27] The Navy fell below 300 battle force ships in August 2003 and included 276 battle force ships as of April 10, 2007.

Table 7 below shows past (FY1982-FY2007) and projected (FY2008-FY2013) rates of Navy ship procurement.

Table 7. Battle Force Ships Procured or Projected, FY1982-FY2013

(Procured FY1982-FY2007; *projected FY2008-FY2013*)

82	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**
17	14	16	19	20	17	15	19	15	11	11	7	4	4	5	4
98	**99**	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**	**12**	**13**
5	5	6	6	6	5	7	8	6	7[a]	*7[a]*	*11[a]*	*12*	*13*	*12*	*12*

Source: CRS compilation based on examination of defense authorization and appropriation committee and conference reports for each fiscal year. The table excludes non-battle force ships that do not count toward the 313-ship goal, such as sealift and prepositioning ships operated by the Military Sealift Command and oceanographic ships operated by agencies such as the National Oceanic and Atmospheric Administration (NOAA).

a. Totals shown for FY2007-FY2009 do not reflect the Navy's march 2007 proposal to reduce the number of LCSs in FY2007, FY2008, and FY2009 from 2, 3, and 6, respectively, to 0, 2, and 3, respectively.

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[27] Some publications, such as some of those of the American Shipbuilding Association, have stated that the Navy reached a peak of 594 ships at the end of FY1987. This figure, however, is the total number of active ships in the fleet, which is not the same as the total number of battle force ships. The battle force ships figure is the number used in government discussions of the size of the Navy. In recent years, the total number of active ships has been larger than the total number of battle force ships. For example, the Naval Historical Center states that as of November 16, 2001, the Navy included a total of 337 active ships, while the Navy states that as of November 19, 2001, the Navy included a total of 317 battle force ships. Comparing the total number of active ships in one year to the total number of battle force ships in another year is thus an apple-to-oranges comparison that in this case overstates the decline since FY1987 in the number of ships in the Navy. As a general rule to avoid potential statistical distortions, comparisons of the number of ships in the Navy over time should use, whenever possible, a single counting method.