

Alternative Structures of Future Naval Forces

When confronted with funding constraints, the Navy has often reduced its force structure. The service has trimmed the number of its battle force ships by more than 45 percent since 1990. More recently, in 1998, it lowered its force goal from 346 ships to about 300. As the previous chapter indicated, in the absence of additional funding, the Navy could well face further reductions in the fleet.

This chapter presents four alternative force structures that the Navy could develop between now and 2020 at roughly its current budget level (adjusted for inflation). Like today's Navy, all of the alternative fleets are power-projection navies. However, each alternative emphasizes a particular portion of the Navy's existing forces: aircraft carriers, surface combatants, submarines, or amphibious ships.

Analyzing the Alternatives

These options illustrate different ways in which the Navy could shape its fleet. Which choice would be "best" depends on how the world evolves between now and 2020 and therefore on what missions the future Navy is asked to perform. The nature and number of future threats to U.S. interests would be an important factor in that choice, but so would the foreign policy goals of the United States and the role of sea power in achieving them. Each alternative has advantages and disadvantages, which are discussed in the context of the different ways in which the world security situation might change over the next 20 years.

Elements of CBO's Analysis

The Congressional Budget Office made a number of assumptions in developing and analyzing the alternatives. The primary assumption was that over the next two decades, the Navy's annual budget would be limited to the inflation-adjusted equivalent of about \$90 billion (in 2000 dollars)—roughly the average the Navy expects to receive each year through 2005 under the 2001 Future Years Defense Program. Moreover, CBO assumed that the force structure for each alternative would be fully funded within that \$90 billion budget limit. The modernization costs that are part of CBO's estimates assume that the Navy would purchase all of the elements of the fleet in adequate numbers to sustain the force structure in the long run.

Each alternative includes at least one new class of ship that the Navy is not currently planning to buy. The designs of those future ships are based on information developed by CBO or by the Navy for analytic purposes. For example, for the future DD-21 land-attack destroyer, the Navy conducted an analysis of alternatives, which considered several different designs for the next surface combatant. In some of the alternatives presented here, CBO used a variant of the design that differs from the DD-21 concept that the Navy actually selected.¹

1. In designing the DD-21 land-attack destroyer, the Navy thoroughly analyzed the missions and requirements the ship would have to fulfill, the capabilities it would have, and the ship's potential costs. (That exercise is called a cost and operational effectiveness analysis.) As part of that process, the Navy also examined various alternatives to the DD-21, including at least six different types of ships as well as combinations of those types. Among the ship types that the Navy studied

The final element that CBO included in its analysis is operating and support costs for each alternative. Those estimates are based on operating costs for the ships in the fleet today.

Overall, three categories of cost—procurement, operation and maintenance, and military personnel—vary with each alternative, depending on the type of ships and aircraft that the alternative includes. However, for any given category, those differences are not greater than 12 percent from one alternative to another. Research and development costs in all of the alternatives are set at \$9 billion—their historical budget share. For military construction and family housing, CBO uses the estimates discussed in Chapter 3: \$1.4 billion and \$1.1 billion, respectively.

Measures of Comparison

The Navy's two groups of missions—peacetime and wartime—provide a framework for analyzing the advantages and disadvantages of these alternatives. The Navy's principal peacetime mission is maintaining a visible forward presence. Other missions that fall under that broader category include enforcing sanctions, responding to humanitarian or other crises, putting ground forces ashore for peacekeeping operations, making diplomatic visits or port calls, and "showing the flag" around the world. The Navy's principal wartime mission is defined in terms of capability rather than actions: the Navy articulates it as having the ability to fight two major theater wars at almost the same time. Under that rubric, the Navy's wartime missions would include controlling the seas and denying enemies their use, conducting forcible-entry operations with Marine Corps troops, and carrying out strike operations.

None of the fleets in CBO's alternatives could perform all of those missions as well as today's Navy can (and today's Navy cannot perform all of them as well as the much larger Navy of 1990 could). But each alternative fleet should be able to perform some

of those missions better than the other alternative fleets could.

Thus, CBO compares each alternative using two criteria: capability and flexibility. Capability is the ability of the force to perform the mission or operate in the environment for which it is best suited. Flexibility is the force's ability to respond to the requirements of different missions. Another way to think about those characteristics is to consider how balanced the fleet is. Can it perform a variety of missions? What is the risk that it will be unable to protect U.S. interests if the international environment in 2020 is different from the one that planners now expect? CBO did not use a formal model to apply those criteria in its analysis. Instead, it performed the analysis qualitatively.

Readers should note, however, that none of these alternatives would be fully suitable if the United States faced an adversary with a naval force that rivaled the U.S. Navy in size and quality of ships. In that event, the \$90 billion budget level would most likely be inadequate—and the force structure too small—for U.S. forces to prevail easily.

Alternative I: Rely on Carriers and Focus on Providing Forward Presence

Under this alternative, the Navy would retain 12 aircraft carriers, at the expense of maintaining other types of ships. The Navy justifies the size of the current carrier force by the requirement to maintain overseas presence rather than by the role those ships would play in wartime.² Thus, the principal mission of this alternative's fleet would be to maintain as much forward presence with aircraft carriers as possible. Proponents of keeping a large force of aircraft carriers would argue that maintaining a robust forward presence deters aggressors, reassures friends, and allows the United States to respond more quickly in a crisis

were a large-capacity missile ship (a variation of the arsenal-ship concept canceled several years ago); a relatively inexpensive sea-dominance maritime interdiction ship; and a power-projection ship capable of carrying Marines, helicopters or V-22s, and Tomahawk missiles.

2. The Department of Defense's 1993 *Report on the Bottom-Up Review* stated that a force of 10 carriers would be adequate to fight two nearly simultaneous regional wars.

than if its fleet sailed from U.S. ports. According to CBO's analysis, the current 12-carrier force would allow the Navy to deploy a carrier in the Far East 100 percent of the time and one each in the Mediterranean and Persian Gulf regions about 85 percent of the time.³

Retaining 12 carriers while staying within current budget constraints would make the Navy even more "carrier heavy" than it is now. As noted earlier, when the Navy reduced its forces after the Cold War, the number of carriers declined less than the number of other major types of ships. Keeping the same number of carriers and remaining within the budget that CBO has assumed for this analysis would require the Navy to cut the number of other ships further.

Force Structure Under Alternative I

This alternative would preserve aircraft carriers as the core of the Navy and would continue the service's modernization programs for carrier aircraft according to current plans. The Navy would buy the F/A-18E/F and the Joint Strike Fighter for both its carrier wings and the Marine Corps's squadrons. In that respect, there would be no difference between this alternative and the Navy's long-term plan.

In the area of surface combatants, however, Alternative I would differ sharply from the Navy's current force goals. By 2020, the number of surface combatants would drop from 117 under the Navy's plan to 83 under this option—a decline of about 29 percent (see Table 7). In that year, the force would comprise 58 sophisticated, multipurpose, Aegis-equipped DDG-51 (Arleigh Burke) destroyers. The remaining 25 ships would be the Navy's new surface combatant, the DD-21—but not the high-end model of that vessel now planned. Instead, the Navy would purchase the less expensive sea-dominance version, which CBO estimates would cost about \$600 million apiece. That version of the DD-21 would have strong

capabilities against enemy submarines and surface ships and the ability to enforce maritime quarantines. Unlike the more sophisticated ships with Aegis radar, however, it would not provide air defense for the fleet, although it would have a self-defense capability. Also missing from this version of the DD-21 would be vertical launch system (VLS) cells to shoot Tomahawk missiles. To stay within budget constraints, Alternative I would also retire all 27 of the Navy's Aegis-equipped Ticonderoga class cruisers and would not replace them. Thus, although the Navy's current force goal calls for 85 Aegis ships, Alternative I would have only 58—about the same number as are in the fleet today.

Under this alternative, the Navy's fleet of attack submarines would decline to 25, compared with the current force goal of 55. The ballistic missile submarine force would be reduced to 10, which is four submarines less than both the Navy's force goal and the number advocated by the Clinton Administration's Nuclear Posture Review.

This option would also reduce the amphibious fleet by one-third. The remaining 24 ships would be organized into eight amphibious ready groups, each containing one large flat-deck ship (capable of deploying amphibious forces by sea and air) and two other amphibious vessels. In many situations, ARGs can substitute for carrier battle groups in providing forward presence. For example, they could be used to fill the gaps in coverage of the Mediterranean and Persian Gulf regions when deployment cycles resulted in the absence of an aircraft carrier.

Under this alternative, the number of combat logistics (replenishment) ships would fall from 31 to 26 because fewer logistics ships would be needed to support the smaller fleet that this option envisions. However, the alternative would retain other vessels—submarine tenders, other support ships (such as surveillance ships and tugs), mine warfare ships, and fleet command ships—in the same numbers as in the Navy's plan.

Capability Under Alternative I

Overall, this option's force structure would provide the same ability to maintain forward presence with

3. Those figures are based on a projected force of 10 nuclear and two conventionally powered carriers in 2003. See Congressional Budget Office, *Improving the Efficiency of Forward Presence by Aircraft Carriers*, CBO Paper (August 1996), pp. 7-9. The 100 percent figure for the Far East is fixed by definition. The Navy counts the carrier based in Japan as being forward deployed even if it is docked in its Japanese home port.

Table 7.
Force Structure Under Alternative I Compared with the Navy's Current Plan

	Navy's Current Plan ^a	Alternative I: Keep a 12-Carrier Navy for Forward Presence	Difference Between Alternative I and the Navy's Plan
Aircraft Carriers	12	12	0
Surface Combatants			
DDG-51 destroyers	58	58	0
DD-21 destroyers	32	25 ^b	-7
CG-47 cruisers	<u>27</u>	<u>0</u>	<u>-27</u>
Subtotal	117	83	-34
Attack Submarines	55	25	-30
Ballistic Missile Submarines	14	10	-4
Amphibious Ships	36	24	-12
Combat Logistics Ships	31	26	-5
Mine Warfare Ships	16	16	0
Fleet Auxiliaries	<u>23</u>	<u>23</u>	<u>0</u>
Total Ships	304	219	-85
Aircraft Carrier Air Wings	11	11	0

SOURCE: Congressional Budget Office.

- a. Assumes that the Navy achieves the force goal of the Quadrennial Defense Review, after adjustments in 2007 and 2012, plus five additional submarines and one additional surface combatant.
- b. The DD-21 destroyers for this option are cheaper and less capable than those in the Navy's plan.

aircraft carriers as the Navy's current plan. That kind of force is best for day-to-day management of affairs and for quick responses to rapidly developing crises in the Mediterranean Sea, Indian Ocean, or Western Pacific regions. The presence of a U.S. military force in a theater of operations could help stop a regional aggressor in the critical early stages of a conflict. Carrier battle groups are also effective sea-control instruments because the long ranges of their aircraft allow them to patrol large areas of sea lanes as well as deal effectively with threats to those lanes.⁴

Yet despite its advantages, this option would substantially weaken the Navy's ability to use surface combatants for forward presence. Currently, the Navy fills its gaps in carrier coverage with groups of cruisers, destroyers, and frigates. But under this alternative, the Navy would be unlikely to have enough of those ships to continue doing so, unless it reduced the number of surface combatants that deploy with a carrier from the current level (typically, four to six).

Another drawback of this option is that other presence missions that do not require carriers might have to be curtailed. For example, Navy ships are routinely involved in trying to stop drug smuggling in waters close to countries that are the source of narcot-

4. For more on the value of carriers, see James L. George, *The U.S. Navy in the 1990s: Alternatives for Action* (Annapolis, Md.: Naval Institute Press, 1992), p. 103. For a current critique, see Rebecca Grant, "The Carrier Myth," *Air Force Magazine* (March 1999), pp. 26-31.

ics. Those ships also conduct joint exercises with other nations' navies. Such operations might have to be reduced under this alternative—or eliminated altogether.

Flexibility Under Alternative I

For the most part, this option would retain nearly the same flexibility to fight two major theater wars as the current Navy plan, but it would be less flexible in other respects. On the one hand, by keeping and modernizing the current fleet of 12 aircraft carriers and their air wings, the Navy would conserve much of the striking power of the battle group. (The remainder of that power is found in long-range missiles.) On the other hand, because the Navy would have fewer surface combatants and submarines under this alternative, its ability to conduct strike operations using Tomahawks or some other type of land-attack missile would be impaired.

The surface ships that this option would sacrifice to maintain the carrier force are the ones that contain large numbers of VLS cells, which carry and launch Tomahawk missiles. Overall, the force created under this alternative would have about 5,500 VLS cells—less than half the number in the Navy's plan. That might prove to be an important limitation if the Navy is increasingly called on to perform the kind of unmanned strike missions with Tomahawks that have been conducted recently in Afghanistan, Somalia, Iraq, and Serbia.

Attack submarines would continue to perform the same missions under this alternative that they do today—gathering intelligence, helping to defend carrier battle groups against attack by diesel-electric submarines in littoral waters, and performing some strike missions. But far fewer submarines would be available for those missions. According to the Bottom-Up Review, the Navy needs 45 submarines to fulfill wartime requirements, although that force is probably too small to fulfill all of the submarines' peacetime requirements. Overall, this option would substantially increase the risk of failure in conducting peacetime missions by attack submarines; it would also introduce considerable risk of failure in carrying out wartime missions. For example, with the 25 submarines under

this alternative, the Navy could keep only four attack subs forward deployed, compared with nine under the Navy's plan—a reduction of more than 50 percent. (To make that calculation, CBO used standards of measurement provided by the Navy.) However, at least one analyst has argued that a submarine fleet of the size that this option envisions would be sufficient: "The United States could cut the number of submarines to 25 modern hulls and still field the best force in the world."⁵

Alternative II: Use Other Ships for Presence Missions

Some critics of the Navy have argued that the service is not designing and building the right kind of ship to perform overseas presence missions, which usually involve operating in coastal waters. This alternative illustrates one way to address that criticism—by cutting the number of aircraft carriers and amphibious ships to buy a more-capable force of surface combatants.

Under this option, the Navy would build its surface combatant force around a new type of presence ship instead of the DD-21 destroyer. The new ship would be patterned after the littoral-supremacy ship proposed by Admiral William Owens, former Vice Chairman of the Joint Chiefs of Staff.⁶ It would resemble a hybrid of a surface combatant and a flat-deck amphibious ship and would perform many of the missions in littoral areas that are now distributed among several classes of ships.

The new vessel would have VLS cells capable of shooting missiles such as the Tomahawk for land attack and the Standard for air and tactical ballistic missile defense. The ship would also carry marines and be able to put them ashore using helicopters and high-

5. Ivan Eland, *Subtract Unneeded Nuclear Attack Submarines from the Fleet*, Foreign Policy Briefing No. 47 (Washington, D.C.: Cato Institute, April 2, 1998), p. 1.

6. Admiral William A. Owens, *High Seas: The Naval Passage to an Uncharted World* (Annapolis, Md.: Naval Institute Press, 1995), pp. 166-169.

speed landing craft. In addition, the vessel could provide landing forces with supporting fire (from the sea using long-range guns or from the air using attack helicopters and vertical or short take-off aircraft). Thus, this hybrid ship might be the only platform needed to conduct small amphibious operations, such as a raid or a rescue of personnel from an embassy.⁷

Force Structure Under Alternative II

Although the number of surface combatants under this option would be about the same as under the Navy's plan—118 versus 117—the capability of the ships would be greater. The surface combatant fleet in 2020 would comprise 58 Aegis-equipped DDG-51 destroyers and 60 of the new multipurpose presence ships (see Table 8). As in Alternative I, the 27 Ticonderoga class Aegis cruisers would be retired because the Navy could not afford them. In addition, the DD-21 land-attack destroyer program would be canceled because those destroyers would be replaced by the presence ships.

This alternative would help pay for the new presence ships by cutting the number of aircraft carriers and aircraft. The carrier force would be reduced from 12 to seven, and the Navy's inventory of tactical aircraft would be cut by eliminating five air wings.

The number of large flat-deck amphibious ships would also be reduced—from 12 to six—and the rest of the amphibious fleet would be retired. Consequently, the number of dedicated amphibious ships would fall from 36 to six. Nevertheless, because of the new hybrid ships, the Marine Corps would suffer no diminution of its lift capability (its capacity to transport troops and equipment). In analyzing this option, CBO assumed that the presence ships would have the same lift capability as the LPD-17 ships now under construction. Thus, this fleet would have substantially more lift capability with respect to troops, cargo space, vehicle space, and spots for air-cushion landing craft than the Navy's current plan. It would have slightly more capability with respect to spots for

vertical take-off and landing aircraft (630 versus 612 under the Navy's plan).

Alternative II would cut the number of ships in other categories as well. The attack submarine fleet would drop from 55 to 34.⁸ And as in Alternative I, the number of ballistic missile submarines would fall from 14 to 10, and the number of replenishment ships would decline from 31 to 26 because fewer would be needed to support a smaller fleet. Like the previous option, this alternative would retain the currently planned numbers of submarine tenders, other support vessels such as surveillance ships and tugs, mine warfare ships, and fleet command ships.

Capability Under Alternative II

The central mission of this option's fleet would be to provide a robust forward presence in many different regions of the world. The fleet's composition is designed to ensure that the maximum number of ships would be "on station" (patrolling their designated areas), ready to respond to low-level crises and to deter potential aggressors as well as promote stability by being visible and available.

In the Western Pacific, the Navy could maintain full-time presence using the aircraft carrier that is based in Japan. The remaining six carriers under this alternative could provide a modest amount of forward presence in the Indian Ocean and the Mediterranean Sea; alternatively, they could provide full-time presence in one of those regions, but the other would be without a carrier. At the same time, this alternative could maintain eight presence ships and five attack submarines in continuous forward deployment, in addition to the carrier battle groups.

With that kind of force structure, this fleet could perform several forward presence missions simultaneously. For example, it could maintain a carrier battle group in the Persian Gulf region continuously, per-

7. Some Navy analysts have also supported this idea. For example, see Commander Sam Tangredi, "A Ship for All Reasons," *Proceedings*, U.S. Naval Institute (September 1999), pp. 92-95.

8. For example, Michael O'Hanlon of the Brookings Institution has argued that a fleet of 35 submarines would be sufficient in light of the fact that U.S. subs no longer need to trail Russian ballistic missile submarines—a principal mission during the Cold War. See O'Hanlon, *How to Be a Cheap Hawk: The 1999 and 2000 Defense Budgets* (Washington, D.C.: Brookings Institution Press, 1998), pp. 125-126.

Table 8.
Force Structure Under Alternative II Compared with the Navy's Current Plan

	Navy's Current Plan ^a	Alternative II: Use Other Ships for Presence Missions	Difference Between Alternative II and the Navy's Plan
Aircraft Carriers	12	7	-5
Surface Combatants			
DDG-51 destroyers	58	58	0
DD-21 destroyers	32	0	-32
Presence ships	0	60	60
CG-47 cruisers	<u>27</u>	<u>0</u>	<u>-27</u>
Subtotal	117	118	1
Attack Submarines	55	34	-21
Ballistic Missile Submarines	14	10	-4
Amphibious Ships	36	6	-30
Combat Logistics Ships	31	26	-5
Mine Warfare Ships	16	16	0
Fleet Auxiliaries	<u>23</u>	<u>23</u>	<u>0</u>
Total Ships	304	240	-64
Aircraft Carrier Air Wings	11	6	-5

SOURCE: Congressional Budget Office.

a. Assumes that the Navy achieves the force goal of the Quadrennial Defense Review, after adjustments in 2007 and 2012, plus five additional attack submarines and one additional surface combatant.

haps to help enforce the no-fly zone against Iraq. It could also keep several presence ships in the Mediterranean—one or two of which might be launching Tomahawk missiles in response to a crisis in the Balkans while another was evacuating noncombatant personnel from a different country in the region. Still another vessel might be deploying marines for a peace-keeping mission in, say, Lebanon on short notice.

In the past, performing all of those missions at once would have required elements of a carrier battle group operating with an amphibious ready group. But this option's new presence ships—arguably fewer in number but, more important, on station year-round—could perform those missions because there would be no gaps in coverage. John Pike of the Federation of

American Scientists has argued that the Navy could reduce its carrier fleet substantially and substitute surface ships in presence missions, although he did not specifically endorse the concept of a littoral-supremacy ship.⁹

Flexibility Under Alternative II

What this alternative would add in performing the Navy's presence mission, it would subtract from the

9. Federation of American Scientists, *1998 Top Ten & Dirty Dozen: Cancel Aircraft Carriers CVN-76 & CVN-77; Cut to Eight Aircraft Carriers* (May 1, 1998), available at www.fas.org/pub/gen/mswg/msbb98/dd09cvn.htm.

service's ability to fight two nearly simultaneous major theater wars. It would keep enough carriers to fight one regional war and perhaps contribute to fighting a second. But the carrier force would not be large enough to provide a sea-based air fleet for two major regional wars if the Air Force did not have access to land bases. That could be a major concern if, as some analysts predict, the United States will face much more restricted access to overseas bases than it has in the past. Moreover, substituting presence ships or a surface action group for some carrier battle groups would lessen the chance that air power based on carriers would be available in a particular theater to halt an armored assault in the early stages of a war, before aircraft that would use land bases could arrive.

A further drawback of this fleet is that several presence ships would probably not be as effective in wartime as a carrier battle group. Indeed, one criticism of the hybrid ship is that although it could perform many missions, it would perform none of them optimally. For example, its limited number of VLS cells might not allow a large-scale strike against land targets, and its constrained capacity to carry marines would not permit a large-scale amphibious assault. In other words, a ship designed to perform all of the missions required for overseas presence might not be the best option for responding to more-severe crises or fighting a war.

Nevertheless, the presence ship could be a very flexible platform. According to Admiral Owens, large multipurpose ships adapt more easily to changes in technology than small specialized ships do: "The very characteristics that portend such power in the context of littoral warfare—the ship's size and multipurpose character—also tend to make it adaptable to whatever strategy we may eventually adopt three decades from now."¹⁰

Thus, in a post-Cold War world in which most crises were small, a force of hybrid ships could be ideal. If a low-level crisis escalated in a particular theater, the fleet's remaining aircraft carriers could always redeploy from other theaters or U.S. ports. But if a second crisis occurred at the same time and could not be contained by the presence ships in the

region, the fleet under Alternative II would have a very difficult time conducting a second major theater war.

Alternative III: Build a Submarine Strike Navy

Alternative III deemphasizes the forward presence mission in favor of the Navy's ability to carry out large strike operations (that is, attacks on land targets) with missiles. In the future, the areas where the Navy may operate could be dominated by regional powers armed with large numbers of relatively inexpensive antiship cruise missiles and small diesel-electric submarines. Because surface ships, especially carriers, may become more vulnerable as a result, this alternative would build more submarines to perform the Navy's strike missions.

Since the 1960s, the technology that makes submarines quieter and thus harder to detect has advanced more rapidly than the technology that allows surface ships or land-based forces to detect submarines. The best submarines are still detectable by surface forces—but only at distances that are within range of the submarines' weapon systems. Consequently, submarines are likely to find surface forces before those forces find them, which means that "[i]f a submarine is in an operating area, other platforms operate at its sufferance."¹¹

The stealthiness of submarines makes them an ideal platform from which to project military power. A major advantage of a fleet that emphasized submarines would be that credible threats of military violence against potential enemies could be made without fear that the means to carry out those threats would be preemptively destroyed. If military action was subsequently required, submarines on station would be able to execute it quickly. Moreover, because they would not be vulnerable to a country's air-defense system, they could use their precision weapons immediately to attack whatever targets U.S. political and military

10. Owens, *High Seas*, p. 169.

11. Naval Studies Board, *Technology for the United States Navy and Marine Corps, 2000-2035: Becoming a 21st Century Force*, vol. 6, *Platforms* (Washington, D.C.: National Academy Press, 1997), p. 86.

leaders chose in support of a particular policy. Thus, as the threats to surface ships multiply and become increasingly difficult to counter, it may be time for the submarine to become the true capital ship of the Navy. As the Naval Studies Board put it:

Over the next 40 years rapid proliferation of high-technology systems will render non-stealthy platforms and weapons systems increasingly vulnerable. The inexorable global spread of modern technology will allow hostile nations to increase their sea-denial capabilities through improved surveillance, enhanced reconnaissance, rapidly expanding information technology and precision weapons. This growing ability to inflict significant casualties on forces that can be detected and tracked easily places a premium on the value of stealth. U.S. forces, required to establish and maintain sea control when and wherever the national interest requires, will need maximum stealth capabilities. The increased value of, and emphasis on, stealth will likely result in increased reliance on submarines in future naval operations.¹²

Force Structure Under Alternative III

Under this option, the Navy would design and acquire 50 new “strike submarines” (see Table 9). It would also enlarge the force of attack submarines to 72—the minimum number that the service considers necessary to meet all peacetime requirements for presence and intelligence collection. The new strike submarines would be big vessels that could carry large numbers of land-attack weapons as well as some unmanned underwater vehicles and, possibly, unmanned aerial vehicles. The subs would also have the conventional armament, communications equipment, and intelligence and surveillance capabilities of an attack submarine. In theory, the new strike submarines could be modeled on the concept to modify Trident subs to carry VLS cells instead of ballistic missiles, which a number of

analysts advocate.¹³ In reality, though, a new strike submarine would be designed and built in a way that could make it far more capable and flexible than a converted Trident.

Although the strike capabilities of such a submarine force would be relatively limited today, they could expand dramatically in the future. New versions of the Tomahawk may be able to attack moving armored targets as a result of increased accuracy and the ability to “loiter” over the battlefield and be re-programmed in midflight. That would make it possible to attack more-mobile targets. In addition, a report by the Naval Studies Board, *Technology for the United States Navy and Marine Corps, 2000-2035*, envisions a family of modular weapons based on a single-stage theater ballistic missile. Such a weapon—which would be less than half the diameter and length of the Tomahawk—would be three times as accurate and thus more capable of finding a way to destroy heavily protected (hard) targets.

Using the capacity of a Trident ballistic missile submarine as a model, a strike submarine could deploy up to 2,000 missiles. Its weapons would be of different sizes, ranges, and capabilities to perform the different missions of attacking wide areas, soft targets, hard targets, and mobile targets.¹⁴ A fleet of 50 such submarines could carry up to 100,000 weapons. (Similarly, a Virginia class attack submarine could deploy six such weapons for every Tomahawk or torpedo in its 38 weapon positions.) A fleet of strike submarines with that kind of bombardment capability would be formidable in any conflict. By comparison, all of the coalition air forces in the Gulf War flew

12. *Ibid.*, p. 85. See also Robert Holzer, “Utility of Subs Rises as Targeting Grows More Precise,” *Defense News* (April 10, 2000), p. 17.

13. Rear Admiral William P. Houley, “Making the Case for SSGNs,” *Proceedings*, U.S. Naval Institute (July 1999), pp. 47-49; Owen Cote Jr., *Precision Strike from the Sea: New Missions for a New Navy*, MIT Security Studies Conference Series (Cambridge, Mass.: Massachusetts Institute of Technology, Security Studies Program, 1998); Jim Courter, “The Boomer Reborn,” *Proceedings*, U.S. Naval Institute (November 1997), pp. 51-53; Andrew Krepinevich, *The Trident ‘Stealth Battleship’: An Opportunity for Innovation*, Background Paper (Washington, D.C.: Center for Strategic and Budgetary Assessments, February 24, 1999). For a contrary view of the value of these types of weapons platforms, see Norman Polmar, “Tridents Are Not the Answer” (letter to the editor), *Washington Post*, February 23, 1999.

14. Naval Studies Board, *Technology for the United States Navy and Marine Corps, 2000-2035: Becoming a 21st Century Force*, vol. 5, *Weapons* (Washington, D.C.: National Academy Press, 1997).

Table 9.
Force Structure Under Alternative III Compared with the Navy's Current Plan

	Navy's Current Plan ^a	Alternative III: Build a Submarine Strike Navy	Difference Between Alternative III and the Navy's Plan
Aircraft Carriers	12	7	-5
Surface Combatants			
DDG-51 destroyers	58	58	0
DD-21 destroyers	32	0	-32
CG-47 cruisers	<u>27</u>	<u>0</u>	<u>-27</u>
Subtotal	117	58	-59
Attack Submarines	55	72	17
Strike Submarines	0	50	50
Ballistic Missile Submarines	14	10	-4
Amphibious Ships	36	18	-18
Combat Logistics Ships	31	26	-5
Mine Warfare Ships	16	16	0
Fleet Auxiliaries	<u>23</u>	<u>29</u>	<u>6</u>
Total Ships	304	286	-18
Aircraft Carrier Air Wings	11	6	-5

SOURCE: Congressional Budget Office.

a. Assumes that the Navy achieves the force goal of the Quadrennial Defense Review, after adjustments in 2007 and 2012, plus five additional attack submarines and one additional surface combatant.

60,000 attack sorties against Iraqi forces.¹⁵ Operation Allied Force, the NATO air campaign against Serbia, involved almost 10,000 ground-attack sorties.

This alternative would produce the smallest number of surface combatants of any of the options in this study: just 58 Aegis-equipped Arleigh Burke destroyers, compared with 117 cruisers and destroyers under the Navy's current plan. The DD-21 land-attack de-

stroyer would be canceled in favor of the new strike submarine, and no other surface combatant would be designed or built. As in the previous alternatives, the 27 Ticonderoga class Aegis cruisers would be retired. As the first surface combatants designed with stealth in mind, the Arleigh Burke destroyers are the newest Aegis ships in the fleet and less vulnerable than the cruisers. The 58 destroyers would be sufficient to provide air defense for a smaller carrier fleet or to carry out their own operations.

Carriers and strike aircraft would be less important under this alternative than under any other. Thus, as in Alternative II, this option would leave the Navy with only seven aircraft carriers, compared with 12

15. Department of Defense, *Conduct of the Persian Gulf War* (April 1992), p. 150. An analyst at the Lexington Institute estimates that there are 25,000 to 35,000 major targets in a theater war, 10 percent of which would be leadership and infrastructure targets. See Vince Crawley, "Air Force Looks to New Cruise Missile, Not Bombers," *Defense Week* (July 12, 1999), pp. 1, 13.

under the current plan. That reduction would help pay for the large submarine force that this alternative would create. To save more money, this option would replace the Navy planes on board aircraft carriers with Marine Corps tactical aircraft squadrons, substantially lessening the Navy's need to maintain a large inventory of aircraft. That element of the option would carry the current practice of substituting some Marine Corps squadrons for Navy planes to its logical conclusion.

This alternative would also reduce the Navy's amphibious fleet—and consequently the Marine Corps's capability afloat—by one-half. If surface combatants are indeed becoming more vulnerable to cruise missiles and submarines, the Navy's amphibious force is in greater danger as well, because it must operate closer to enemy coasts to conduct its missions than any other type of combatant (except minesweepers). Specifically, under this option, the number of large flat-deck amphibious ships (LHAs and LHDs) would be reduced from 12 to six. And the number of LPD amphibious transport docks and LSD dock landing ships would drop to six each, down from 12 each under the Quadrennial Defense Review. As a result of those reductions, the Marine Corps would be able to maintain only 1.25 Marine expeditionary brigades afloat, down from the current capability of about 2.1 and well below the Navy's force goal of 2.5.

With respect to support ships, six submarine tenders would be added because of the large increase in underwater vessels in this option. In contrast, the number of replenishment ships would fall by five. Otherwise, the alternative would retain the same number of fleet support ships as in the Navy's current plan.

Capability Under Alternative III

This alternative is designed to address the problem of a world in which potentially hostile regional powers have acquired large numbers of antiship cruise missiles and diesel-electric submarines.¹⁶ The Navy's principal mission under this option would be to pro-

vide capability for land-attack warfare with missiles. The submarine force that this option provides would allow the Navy to deliver a large amount of ordnance against a potential aggressor. Moreover, the size of the force—50 strike submarines and 72 attack submarines—means that eight strike submarines and 12 attack submarines could be forward deployed continuously. (If the Navy maintained two crews for each strike submarine, as it does for its strategic Trident submarines, it could keep about 25 strike submarines forward deployed at once.) Thus, the Navy would have a considerable capability readily available to strike deep into enemy territory in several different regions simultaneously. It would also have a bombardment capability that could be generated in the event of crisis or war by putting most of the submarine force to sea on short notice.

Nevertheless, at least initially, the new submarine would be a less potent weapon for strike missions than an aircraft carrier, although it would also be less vulnerable. Compared with the Tomahawk missiles that the submarines would carry, the aircraft from a carrier can hit a wider variety of targets. The Tomahawk has a greater range than those aircraft but is still limited to soft or fixed targets (currently, it is ideal for low-level retaliatory strikes to punish an aggressor). Thus, if the strike submarines envisioned for this option carried only the existing Tomahawk missile or some similar weapon, they would not be nearly as effective as carriers.¹⁷

The rest of the fleet under Alternative III—the surface combatants, carriers, and amphibious ships—would continue to perform some of their traditional missions. But because of their reduced numbers and vulnerability, they would perform those missions less frequently, or in some cases not at all. The small surface combatant force would be sufficient only to protect the carriers and amphibious ready groups and might be hard-pressed to do even that. The seven carrier battle groups could still perform some forward presence missions in peacetime, maintaining full-time presence in the Western Pacific and either modest presence in both the Mediterranean Sea and Indian Ocean or nearly full-time presence in one of those two.

16. For additional discussion of that problem, see Cote, *Precision Strike from the Sea*, pp. 11-14.

17. On the advantages and disadvantages of this type of alternative, see George, *The U.S. Navy in the 1990s*, pp. 73-74.

Seven carriers would also be sufficient to fight one major theater war, but they would not be performing deep-strike missions and would be limited to close air support of troops on the battlefield. Finally, the smaller amphibious forces in this option could still carry out traditional missions such as evacuating non-combatant personnel, but their reduced numbers would make them less available for such tasks.

Flexibility Under Alternative III

Perhaps the biggest weakness of this alternative is the dramatic reduction it would make in the Navy's visible forward presence during peacetime. Under this option, the Navy would have 83 ships for that mission (seven aircraft carriers, 58 surface combatants, and 18 amphibious ships)—only half as many as under the service's current plan. That reduction would lead to a corresponding drop in the amount of visible presence the Navy could achieve.

Can submarines be used for visible forward presence? The answer is yes, but that use would defeat the purpose of investing in a large submarine force. The sail of a strike submarine may be as effective in "showing the flag" as the silhouette of an Aegis destroyer, but it exposes the submarine to discovery, identification, and attack, betraying its chief asset—stealth. Furthermore, a submarine sitting on the surface cannot defend itself against antiship cruise missiles.

With its emphasis on submarines, the fleet in Alternative III would have a much smaller capacity for sea control—in other words, for guaranteeing safe passage of military or civilian ships across the lines of communication at sea. If, as this option assumes, the proliferation of antiship cruise missiles based on land made surface ships more vulnerable, sea control in littoral waters might prove difficult if not impossible to achieve under this alternative. Submarine forces could do little to protect shipping unless their strike weapons could destroy every conceivable threat to a merchant ship in coastal regions. The carrier battle groups would be able to provide some measure of sea control in areas farther away from the littorals. But that capacity might be of relatively little use to mer-

chant vessels, since most attacks on shipping tend to occur near coasts.

Although it would have less capacity for controlling the seas, the Navy under Alternative III would probably be highly effective at denying other navies or civilian ships the use of the seas. As was demonstrated in World War II, submarines are the preeminent sea-denial weapon. How useful, though, is a potent sea-denial capability? Against an enemy such as Yugoslavia, which has only a very small navy, it is not particularly important. That capability is more useful against an opponent with a large amount of seaborne trade (although denying another state the use of the seas in peacetime, such as through an embargo, is more difficult with submarines because they have to surface to stop merchant ships).

A powerful sea-denial capability could prove highly effective against a large hostile Asian power that had a large navy and depended heavily on trade with its island neighbors. In any conflict with such a country, its shores would probably be heavily armed with antiship cruise missiles. Thus, the most effective naval response to such a power would probably be sea denial using submarines.

Alternative IV: Reorient the Navy to Provide More Support to the Marine Corps

After the Cold War, the Navy revised its doctrine and shifted its focus from fighting the Soviet navy in the open ocean to conducting missions in coastal areas. As part of that revision, it published the white papers . . . *From the Sea* in 1992 and *Forward . . . From the Sea* in 1994. The first report emphasized the Marine Corps's role in the Department of the Navy and the Navy's support of that role. The second report put about equal emphasis on that mission and on the Navy's overseas presence and strike missions. This alternative would orient the Navy more in accordance with the principles in . . . *From the Sea* than with those in *Forward . . . From the Sea*.

In the strategic environment of the post-Cold War world, emphasizing the Marine Corps and its amphibious capabilities may make a lot of sense. The United States is unlikely to face a global competitor similar to the former Soviet Union for many years to come. At most, the nation may someday confront one or more smaller, regional powers that endanger U.S. interests by, for example, their ability to threaten allies or the free flow of commercial shipping. The Marine Corps's amphibious assault capabilities could prove useful against such opponents should the United States need to attack them with ground forces.

In addition, the Marine Corps is well suited to the low-intensity missions that U.S. forces have been involved in since the end of the Cold War—missions such as peacekeeping, humanitarian intervention, hostage rescue, and evacuation of civilian personnel. In the view of one analyst, those types of operations—not conflicts like the Persian Gulf War—are now the “norm.”¹⁸ The Marines are structured precisely to perform those missions, which often arise with little warning.

Force Structure Under Alternative IV

The most important feature of this alternative is that it would spend more on amphibious ships than the Navy's current plan. Under this option, those ships would number 43 rather than 36, because the Navy would buy 19 amphibious transport docks (LPD-17s) rather than the 12 now planned (see Table 10). Furthermore, the variant design of the LPD-17 assumed under this alternative would be equipped with VLS cells. Both Alternative IV and the Navy's plan would retain 12 LHA or LHD amphibious assault ships and 12 LSD dock landing ships.

Today, the Navy's (fiscally constrained) goal for amphibious lift is the capacity to deploy 2.5 Marine expeditionary brigades (MEBs). The Navy expects to meet that goal by 2010 when it completes the 12-ship LPD-17 program. The Marine Corps's requirement for the amphibious warfare fleet, by contrast, is to be able to deploy the assault echelons of three expedition-

ary brigades. To achieve that goal, the Navy would have to purchase another seven LPD-17s.

This option would buy those seven additional LPD-17s to reach the Marine Corps's goal of deploying three MEBs. That capability would give the Corps enough amphibious lift to land a contingency-response force capable of fighting its way in—what the Marines call a “forcible entry operation”—in two geographically distant theaters at the same time. (According to the Marine Corps, a MEB is the smallest force capable of conducting a forcible-entry operation.)¹⁹

The second most important feature of this alternative is that it would almost triple the size of the Navy's mine-clearing force. By procuring an additional 31 ships similar to the MCM-1 Avenger class, as well as two large vessels to serve as support ships, the Navy would increase the number of mine-clearing ships it could deploy to 47—meeting the minimum goal for those ships that it established after the Gulf War.²⁰ Part of the rationale for buying 31 new ships is that the existing 14 vessels of the Avenger class may be insufficient to clear mines for a single medium-sized amphibious assault, let alone two nearly simultaneously.

To help pay for those new ships, the carrier force would be cut to 10, which would be enough to support two medium-sized amphibious assaults. In addition, the attack submarine force would fall to 30. With respect to tactical aircraft, the Navy would purchase several F/A-18E/Fs, and the Marine Corps would buy the Joint Strike Fighter. But as was the case in Alternative III, the Marine Corps's tactical aircraft squadrons would substitute for Navy aircraft on carriers. That substitution would save money by reducing the Navy's inventory of tactical aircraft and would integrate the Marines into carrier operations, where they

18. George, *The U.S. Navy in the 1990s*, p. 111.

19. Department of the Navy, *Integrated Amphibious Operations and USMC Air Support Requirements* (January 1990), p. 68. That report is commonly known as the DON Lift II Study.

20. Norman Polmar, *The Naval Institute Guide to the Ships and Aircraft of the U.S. Fleet* (Annapolis, Md.: Naval Institute Press, 1996), p. 198. The Navy also has 12 coastal minehunters of the MHC-51 Osprey class, which were designed and built to clear U.S. ports in the event they were mined. Those vessels, however, have limited endurance for overseas operations.

would be well placed to carry out amphibious operations.

Like most of the other alternatives, this option would reduce the overall number of surface combatants. It would retain the 58 Arleigh Burke destroyers in the Navy's current plan and retire the 27 Ticonderoga class cruisers. But under this alternative, the Navy would also buy 35 future surface combatants dedicated to maritime support of the Marines in littoral areas. Those ships would be similar to the DD-21 as currently planned but would carry at least four 155-millimeter guns to support amphibious assaults. CBO chose that size of gun because the Army has already

developed antitank, fragmentation, and wide-area munitions for 155mm guns. If the Army and Navy could buy the same size ammunition, the Department of Defense might realize some savings from "economies of scale" on those purchases. Moreover, a Navy cost and operational effectiveness analysis chose that caliber of gun to improve fire support on the DD-21. The 155mm rocket-assisted shell would have a range of up to 100 nautical miles and be three times as powerful as the current 5-inch round.

In addition to 155mm guns, the maritime support ships would carry improved radar to reduce the harmful effects of interference from ground clutter, which

Table 10.
Force Structure Under Alternative IV Compared with the Navy's Current Plan

	Navy's Current Plan ^a	Alternative IV: Reorient the Navy to Provide More Support to the Marine Corps	Difference Between Alternative IV and the Navy's Plan
Aircraft Carriers	12	10	-2
Surface Combatants			
DDG-51 destroyers	58	58	0
DD-21 destroyers	32	0	-32
SC-21 (Littoral warfare)	0	35	35
CG-47 cruisers	<u>27</u>	<u>0</u>	<u>-27</u>
Subtotal	117	93	-24
Attack Submarines	55	30	-25
Ballistic Missile Submarines	14	10	-4
Amphibious Ships	36	43	7
Combat Logistics Ships	31	26	-5
Mine Warfare Ships	16	47	31
Fleet Auxiliaries	<u>23</u>	<u>23</u>	<u>0</u>
Total Ships	304	282	-22
Aircraft Carrier Air Wings	11	9	-2

SOURCE: Congressional Budget Office.

a. Assumes that the Navy achieves the force goal of the Quadrennial Defense Review, after adjustments made in 2007 and 2012, plus five additional attack submarines as well as one additional surface combatant.

afflicts most shipboard sensors. An improved system would also function as a counterbattery radar—similar to the land-based Firefinder system. With such radar, the Marines could pinpoint fire from enemy guns so those guns could be destroyed by shells from the support ships.

Capability Under Alternative IV

The central mission of the fleet under this alternative would be to support the Marine Corps in any operation it might have to conduct from the sea. In that respect, this Navy would be better suited for that role than any of the other alternatives, including the Navy's current plan. This Marine-support Navy would provide more amphibious lift, more mine-clearing capability, and substantially more gunfire from the sea. In addition, its carrier fleet would be oriented toward conducting close-air-support operations for the Marine Corps. In this sort of Navy, "All ships are either amphibious ships or amphibious support ships."²¹

Amphibious Lift. With the seven additional LPD-17s that this option would buy, the Navy's amphibious fleet would achieve the Marine Corps's goal of being able to transport the assault echelons of three Marine expeditionary brigades. Thus, it could support two simultaneous Marine operations in widely separated theaters, such as the South Pacific and the Mediterranean.

In addition, the three MEBs could constitute the assault echelons of a Marine expeditionary force. Such a force, which totals about 40,000 troops, could conduct a large amphibious assault in a major theater war. The United States has not conducted a major amphibious landing since the Korean War. Nonetheless, the three-MEB lift capability that this alternative would provide might offer insurance against a military need that has arisen in the past.

Mine Clearing. The added mine-clearing ships under this option would be sufficient for at least one major theater war. In the Gulf War, for example, the United States and its allies deployed a total of 34 mine-clear-

ing vessels. This alternative would give the Navy an even larger force that would be completely under its operational control. That force, however, would solve only part of the problem that the Marines face with mines. The current Avenger class ships cannot clear mines relatively close to shore. (If the United States had to clear such mines today, it would have to use sea mammals, such as dolphins.) Shallow-water mine clearance would require the development of new technology, which this alternative would allow under its general research and development budget. But long-term solutions for shallow-water mine clearance are speculative and beyond the scope of this study.

Supporting Fire. The Marine Corps's need for supporting gunfire from Navy ships flows from the fact that its ground units have fewer tanks and less artillery than the Army's tank or mechanized infantry divisions do. Consequently, the Corps's forces are lighter and, arguably, more mobile and flexible than the Army's, but they can also be more vulnerable. With the final retirement of the Iowa class battleships in 1992, the largest gun that Navy ships carry is 5 inches—which some experts consider inadequate to provide covering fire for a large-scale amphibious operation. Five-inch shells have several drawbacks: they have relatively limited lethality and a range of only 12 nautical miles, which requires Navy ships to expose themselves to enemy attack by coming close to the shore to fire.²²

Some planners see missiles fired from VLS cells on surface combatants as the solution to the Marines' need for covering fire. But missiles cannot provide all of the shore bombardment that the Marines require. Guns, by comparison, sustain a high volume of fire using cheaper projectiles to suppress enemy forces before and during an assault. Gunfire can also be adjusted easily at the request of ground forces.

Flexibility Under Alternative IV

By orienting its fleet more toward the requirements of the Marine Corps, the Navy would give up some of its

21. Rear Admiral Woody Sutton as quoted in Peter J. Skibitski, "Admiral Says Naval Amphibious Blueprint Must Change Dramatically," *Inside the Navy* (November 8, 1999), p. 8.

22. As an interim improvement, the Navy is developing an extended-range gun munition to provide more gunfire support. The munition is a rocket-propelled shell that will extend the range of the Navy's 5-inch guns to 63 nautical miles. Its complexity, however, is posing a technical challenge to the Navy.

current emphases—namely, the deep-strike mission. The Navy's current and future carrier aircraft programs give it the ability to strike targets far inland. Under this alternative, the Navy would cede most of that mission to the Air Force and orient its carrier aircraft toward providing close air support to the Marines. Navy ships would still offer some deep-strike capability, however, primarily through Tomahawk missiles deployed on surface combatants and attack submarines.

The United States currently has redundant capability among the services for striking inland targets. Heavy Air Force bombers (such as the B-1, B-2, and B-52), Air Force tactical fighters (such as the F-15E and the future Joint Strike Fighter), the Navy's tactical aircraft and Tomahawk missiles, and the Army's Tactical Missile System can all strike high-value, strategic fixed targets—such as bridges, airfields, or command-and-control installations—behind enemy lines. Alternative IV recognizes that redundancy and the fact that the Navy's relatively limited deep-strike assets (compared with the Air Force's) would probably be insufficient for conducting a major theater war. Under this option, the Navy's strengths would lie not in performing sustained deep-strike missions but in conducting small littoral operations that require relatively little deep-strike capability or in preparing the way for the introduction of land-based ground and air power, such as in securing a beachhead. Some Navy officers have argued for such an orientation.²³

With respect to other missions, this alternative's fleet would have more capability to conduct visible forward presence than the fleet described in Alternative III (though less than the fleets of the first two options). The 10 carrier battle groups would permit full-time presence in the Western Pacific and about half-time presence in the Mediterranean Sea and the Indian Ocean. The gaps in presence in those regions might be filled with the new maritime support surface combatants and with amphibious ships, in light of their increased numbers in this option. However, because the attack submarine fleet would be cut to 30, the Navy would be able to keep only five subs forward deployed.

Conclusions

CBO's four alternative fleets differ in varying degrees from the fleet in the Navy's current plan. With respect to numbers, the distribution of ships in Alternatives I and IV is similar to that in the planned fleet, but the distributions in Alternatives II and III vary significantly from that arrangement (see Table 11). With respect to displacement (tonnage), Alternative IV is the most balanced fleet and the most similar to the Navy's current plan. Alternatives I, II, and III differ more from that plan because they emphasize a particular type of ship.

The similarities among the alternatives and the Navy's current plan are not surprising. Ships have long service lives, between 30 and 50 years. Thus, many ships in the fleet today could still—and probably will—be in service a quarter century from now. Scrapping most of the fleet and replacing it with new ships is simply too expensive, even if the world is fundamentally different today than it was 15 years ago.

Continuing the Current Funding Level Would Force Future Trade-Offs

Within the same budget level, each of these alternatives describes a different Navy and emphasizes a different mission—which suggests some of the trade-offs that future naval planners may face. Alternative I maintains 12 carriers at the expense of all other types of ships and stresses the importance of those vessels in maintaining forward presence. However, that alternative would produce the smallest fleet—219 ships—among the navies examined here. Aircraft carriers and their air wings are clearly expensive investments, and the Navy's determination to keep the carrier fleet at 12 would have a deleterious effect on the rest of the fleet over the next 20 years in the absence of major increases to the service's budget.

Alternative II, like the first option, maintains a great deal of forward presence, but it adds some flexibility with ships that are capable of performing the varied yet relatively small missions that the Navy is frequently assigned. That option's fleet of 240 war-

23. See, for example, Commander Kevin Peppe, "Constant Bearing, Decreasing Range," *Proceedings*, U.S. Naval Institute (December 1996), p. 42.

ships combines the surface combatant and amphibious forces into one but is dominated by surface combatants, especially a new hybrid presence ship. As in the first alternative, however, all other major categories of ships must suffer substantial cuts to put this forward-presence-oriented force to sea.

Alternative III builds a Navy that is arguably the most different from today's. It allocates over 45 percent of the fleet to submarines (compared with 23 percent today) and would call on those vessels to perform many of the missions now conducted by aircraft carriers and surface ships. It is also the alternative that

Table 11.
Distribution of Ships Under the Navy's Current Plan and Four Alternatives

	Navy's Current Plan ^a	Alternative I: Keep a 12-Carrier Navy for Forward Presence	Alternative II: Use Other Ships for Presence Missions ^b	Alternative III: Build a Submarine Strike Navy	Alternative IV: Reorient the Navy to Provide More Support to the Marine Corps
Number of Ships					
Aircraft Carriers	12	12	7	7	10
Surface Combatants	117	83	118	58	93
Submarines	69	35	44	132	40
Amphibious Ships	36	24	6	18	43
All Others	<u>70</u>	<u>65</u>	<u>65</u>	<u>71</u>	<u>96</u>
Total	304	219	240	286	282
Percentage of Fleet					
<i>By Numbers</i>					
Aircraft Carriers	4	5	3	2	4
Surface Combatants	38	38	49	20	33
Submarines	23	16	18	46	14
Amphibious Ships	12	11	3	6	15
All Others	<u>23</u>	<u>30</u>	<u>27</u>	<u>25</u>	<u>34</u>
Total	100	100	100	100	100
<i>By Displacement (Tonnage)</i>					
Aircraft Carriers	25	34	14	17	24
Surface Combatants	24	18	58	12	21
Submarines	14	10	9	40	9
Amphibious Ships	20	18	5	12	27
All Others	<u>17</u>	<u>19</u>	<u>14</u>	<u>19</u>	<u>17</u>
Total	100	100	100	100	100

SOURCE: Congressional Budget Office.

a. Assumes that the Navy achieves the force goal of the Quadrennial Defense Review, after adjustments made in 2007 and 2012, plus five additional attack submarines as well as one additional surface combatant.

b. In effect, this alternative combines the surface combatant and amphibious fleets into one force.

faces the most technical risk. Having submarines serve as the Navy's principal strike weapon and carry out many of the strike missions now performed by aircraft carriers would require substantial improvements in submarines' weapons, sensors, and communications. Those improvements appear to be technically possible, but they do not yet exist. In a sense, this alternative emphasizes an emerging revolution in military affairs.

Alternative IV, which focuses on the Navy's support of the Marine Corps, is probably the alternative most like the Navy of today. Under that option, the amphibious fleet would grow by a few more ships, and each of the other major categories would be reduced fairly evenly, for a total fleet of 282 ships.

The Choice Among Alternatives Depends on the Future Security Environment

Inevitably, after an analysis such as this, the question arises, Which alternative is best? There are two ways to answer that question. First, the alternatives are merely illustrative. Each one represents a plan for reconfiguring the Navy over the course of 20 years. Many other approaches are feasible—for example, combinations that might mix and match elements from these alternatives or plans that represent something entirely different.

Second, which option is best depends on what one expects the world to look like in 2020. Different scenarios lead logically to different alternatives. Consider the following five examples:

- o If one expected that in 2020, the United States would be engaged in a new cold war with at least one rival superpower (a wealthy and hostile China, perhaps, or a rejuvenated Russia) and that rival was investing heavily in naval forces, none of these alternatives might be adequate. Instead, the United States might require a much larger Navy.
- o If one expected a relatively peaceful and prosperous world with perhaps two or three potential regional troublemakers who did not have power-

ful antiship capabilities, Alternative I might make the most sense. Its large carrier force would seem well suited to dealing with a problem nation, if necessary, while maintaining substantial forward presence to promote general tranquility.

- o Similarly, if one believed that all of the major regional powers in 2020 would be peaceful and that prosperity would be steadily, if slowly, expanding, Alternative II might look attractive. The fleet under that option would be a flexible force well suited to dealing with small problems; in addition, it could promote stability by maintaining more visible forward presence than any other alternative.
- o Conversely, if one envisioned a world in which numerous hostile regional powers were well equipped with effective and difficult-to-counter antiship cruise missiles, mines, and small, cheap submarines, Alternative III would appear to hold sway. In that world, the United States might not be the superpower it is today, but it would be much more than the equal of any regional power. A submarine strike Navy would permit the United States to pursue its interests during conflicts with one or more of those states without seriously jeopardizing its naval forces.
- o Finally, if one predicted a world of chaos, religious strife, and disintegrating political regimes, Alternative IV might be the best choice. In such a world, the United States would probably conduct operations similar to those it has undertaken in Haiti, Somalia, and Panama. A stronger and larger amphibious force with appropriate support ships could effectively perform those kinds of missions.

Clearly, there are distinct differences in the threats the Navy may one day face and the missions it may be called on to perform. Each alternative Navy discussed here would have strengths and weaknesses for dealing with those threats and performing those missions. Determining which alternative (or combination thereof) would be the best depends on which missions one considers most important and which threats or challenges the United States is likely to face well into the 21st century.