

Future Surface Force Manpower Requirements: 2012–2041

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051112-N-6106R-120 Tsugaru Strait (Nov. 12, 2005) – U.S. Navy guided missile cruisers and destroyers assigned to Destroyer Squadron 15 cruise in formation during a transit of the Tsugaru Strait as part of a bilateral Annual Exercise 2005 (ANNUALEX) with Japan Maritime Self-Defense Force. ANNUALEX focuses on improving the military-to-military relationship between the United States and Japan. The purpose of ANNUALEX is to improve bilateral interoperability, to defend Japan against maritime threats, and to improve capability for surface warfare, air defense, and undersea warfare. U.S. Navy photo by Photographer's Mate Airman Stephen W. Rowe (RELEASED).

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Contents

Executive summary	1
Background and approach	1
Findings.	1
Future manpower requirement for the PB12 force structure plan	1
Impact of proposed PB13 force structure program changes.	3
Recommendations	3
Introduction and tasking	5
History	5
Issues	6
Organization of document	6
Approach and methodology.	7
What we mean by manpower requirements	7
Our tasking	7
Defining manpower requirements.	8
Calculating future manpower requirements	9
Defining the future surface ship force structure	9
Defining manpower requirements for individual ships	10
Aggregating requirements across all ships.	11
Rules and assumptions.	12
Rotational crewing	12
Maintenance support crews on submarine tenders.	13
Precommissioning crews	13
Input data	15
Future surface ship force structure	15
PB12 shipbuilding plan.	15
Proposed changes to the PB12 force structure program	19

Individual ship manpower requirements	21
Military-crewed ships	21
Civilian-crewed ships	23
Manpower requirements for non-ship surface force units	25
Afloat staffs, NBG units, and PC ships	25
Aegis Ashore	28
Results	31
Total surface fleet manpower requirements	31
PB12 shipbuilding plan	31
Impact of proposed PB13 force structure changes	33
Surface community requirements	35
Aggregate requirements across all surface communities	36
Requirements for individual communities	39
Experience mix	40
STG, MN, FC Aegis, and SWO communities	42
Conclusions and recommendations	51
Future requirements based on the PB12 force structure plans	51
Total military requirements	51
Enlisted surface communities	52
Surface Warfare Officers	53
Impact of proposed PB13 force structure program changes	53
Ship versus non-ship requirements	54
Two recommendations	55
Investigate potential problems	55
Continue to project fleetwide manpower requirements	55
Appendix A: PB12 ship inventory	57
Appendix B: Surface force “non-ship” operational units	59
Appendix C: Future enlisted surface community manpower requirements	65

Glossary	69
References	73
List of figures	75
List of tables	77

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Executive summary

Background and approach

In May 2011, the Secretary of the Navy presented Congress with a 30-year shipbuilding plan based on the President's Budget for FY 2012 (PB12) that calls for building more but less expensive ships in the near term. In combination with planned ship service-life extensions, this plan will increase the size of the surface force. In the past decade, manpower costs have increased by nearly 11 percent, while active endstrength has decreased by over 12 percent. Though current forecasts call for a stabilized active-duty endstrength, further increases in manpower cost rates could force the Navy to reduce endstrength.

The fact that the current shipbuilding plan appears to expand the size of the surface force at a time when the Navy faces pressures to stabilize manpower costs raises concerns about whether the Navy will have sufficient endstrength to man the future surface force. Commander, Naval Surface Force, U.S. Atlantic Fleet asked CNA to investigate these concerns by answering such questions as (a) how will surface fleet manpower requirements change in the next 30 years, (b) which surface communities will experience significant changes in their afloat manpower requirements, and (c) if such changes occur, what problems could they pose?

Findings

Future manpower requirement for the PB12 force structure plan

Surface force manpower requirements are driven by the number and mix of military-crewed surface ships (i.e., surface combatants, aircraft carriers, submarine tenders, and amphibious, mine countermeasure (MCM), and command ships). The active fleet currently has 170 of these ships. Based on the PB12 shipbuilding and ship retirement plans, the fleet will grow to 188 ships by 2022 and will stay near this level through 2028. After that, the number of military-crewed surface ships will start to decline, eventually falling to 179 by 2041.

In 2012, military-crewed surface ships have a combined active-duty military manpower requirement of 83,105 billets.¹ Over the next decade, as the force grows, these requirements will increase by almost 7,300 positions, or 9 percent. Surface fleet manpower requirements will remain near this level through 2028 before falling to just over 75,000 billets by 2041. Looking at the enlisted surface communities only, their future surface fleet manpower requirements will follow the same trend as the total military requirements. Over the next decade, these requirements (in aggregate) will increase by almost 9 percent. This increase is not distributed evenly. Some communities will see significantly larger increases over the next decade, while others will see smaller increases or even decreases in their requirements. On average, the combat systems/operations communities will experience larger increases than the engineering communities.

Our estimates also show that future manpower requirements for enlisted surface communities will become more senior. Overall, we forecast a 2- to 3-percent drop in the portion of both E3 and E4 requirements and a corresponding increase in the portion of both E6 and E7 requirements. Similar to total requirements, some communities will see larger shifts than others. This shift to more senior requirements will further increase manpower costs, making it more difficult to find the endstrength needed to meet the increase in future requirements.

Moving to officers, our estimates show that ship requirements for the Surface Warfare Officer (SWO) community will increase by 13 percent in the next decade. The portion of O1 shipboard requirements will decrease by 9 percent, while the portion of O3 requirements increases. The SWO community has more junior SWOs in its inventory than it has requirements; consequently, surface combatants are overmanned with junior SWOs. Under the existing SWO career path model, more O3 requirements and fewer O1 requirements will exacerbate this overmanning.

1. We express manpower requirements in billets, where a billet equates to an endstrength position. We base our projections mainly on authorized billets because they determine endstrength requirements. (Note that authorized billets may differ from a ship's true manpower requirements.)

Impact of proposed PB13 force structure program changes

Because of pending DOD budget cuts, the Navy continues to reassess its future surface force structure program. In its PB13 budget submission, the Navy proposed changes to the PB12 force structure program. For the surface fleet, these changes consist of accelerating the retirements of seven guided missile cruisers (CGs) and two landing support dock (LSD) ships. The proposed plan calls for retiring four CGs in 2013, three CGs in 2014, and two LSDs in 2014.

Compared with the PB12 plan, these early retirements will reduce surface fleet manpower requirements during the 2013–2027 time period—the largest reductions occurring between 2014 and 2023. These reductions will cause a larger drop in total surface fleet manpower requirements over the next two years—5,854 billets compared with 2,882 billets under the PB12 plan—and a smaller increase in requirements over the next decade. Total manpower requirements will only grow to 87,694 billets by 2021 (a 5-percent increase from current levels) compared with 90,393 billets under PB12.

Restricting our look to the enlisted surface communities, these early retirements will reduce annual manpower requirements during 2014 to 2023 by over 1,800 billets. These reductions will cause a larger drop in surface community requirements over the next two years—2,676 billets compared with 858 billets under the PB12 plan—and a smaller increase in billets over the next decade. Total manpower requirements will only grow to 36,470 billets by 2021 (a 4-percent increase from current levels) compared with 38,290 billets under PB12.

For the SWO community, accelerating the retirements of these nine ships, particularly the seven CGs, will reduce manpower requirements during the 2014–2024 period by more than 150 billets per year.

Recommendations

As a result of this study, we offer two recommendations. First, our forecasts of future surface force manpower requirements reveal four issues that we believe could pose significant problems and, therefore, warrant future investigation:

- Under the PB12 plan, surface force manpower requirements will increase by 9 percent over the next decade; even with the proposed PB13 force structure changes, requirements will increase by 5 percent. The Navy will face a difficult challenge to find the additional endstrength to man these requirements.
- Future enlisted manpower requirements on ships will become more senior. Although flexibility in the advancement/promotion system should allow the Navy to grow a personnel inventory to meet these more senior requirements, faster promotions will lead to lower experience levels in both leadership skills and technical proficiency for midgrade and senior sailors.
- Future SWO requirements on ships show a significant decrease in the percentage of O1 (ensign) requirements and a corresponding increase in the percentage of O3 (lieutenant) requirements. Because the SWO community accesses officers to meet department head requirements (at the O3–O4 level), these changes will likely exacerbate the overmanning of ensigns on surface combatants.
- Retiring the MCM ships will reduce afloat requirements for the Mineman community by over a third and eliminate all junior (i.e., E3–E4) at-sea billets. These changes call into question the feasibility of maintaining a separate Mineman community.

Our second recommendation follows from the fact that Navy planners consider many factors in determining the size and shape of the future surface fleet (e.g., warfighting capability and requirements, sustaining the U.S. industrial base, and ship construction and service-life extension costs). While manpower costs are a concern, it is unclear how much long-range forecasts of future manpower requirements across the entire fleet factor into these decisions. We submit that projecting and analyzing future manpower requirements for the entire fleet should play an important role in the decision process. If manpower costs continue to rise and active duty endstrength continues to decline, we believe that this type of analysis becomes even more critical to this planning process.

Introduction and tasking

History

Since issuing its long-term shipbuilding plan in 2006, the Navy has made several updates. The most recent update is described in [1], the Secretary of the Navy's letter to Congress that lays out the 30-year shipbuilding and ship retirement plans.² There are significant changes to the original 313-ship plan—changes that affect both the total number and the mix of ships. Most notably, they call for building more but less expensive surface ships in the near term; when combined with planned ship service-life extensions, this increase will bring the size of the surface fleet from 221 ships in 2012 to a high of 261 in 2022.^{3, 4}

The FY 2012 plan continues the Navy's decision to cancel the CG(X) future cruiser program and caps production of the DDG-1000 guided missile destroyers at three, while restarting production of the DDG-51s. These changes are noteworthy because CG(X) and DDG-1000 were minimally manned ships that will now be replaced by the more manpower-intensive DDG-51 ships. Furthermore, the FY 2012 plan calls for increasing the number of amphibious warfare ships (i.e., LHAs/LHDs, LPDs, and LSDs) from 30 to 36 by 2023. These ships, particularly the replacement LHA ships, require large crews.

As the Navy plans investments to recapitalize its force structure, it faces another resource concern brought about by the rising cost of

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2. The letter provides an update to the previous *Annual Long-Range Plan for Construction of Naval Vessels for FY 2011* [2].
 3. Whereas the 313-ship Navy reference includes submarines, our surface fleet numbers include only surface vessels.
 4. Our surface fleet numbers include both military-crewed and civilian-crewed (i.e., Military Sealift Command-operated) ships.

manpower. Over the past decade, manpower costs (i.e., MPN appropriations) have increased by nearly 11 percent, and active endstrength has decreased by more than 12 percent. Although current forecasts call for a stabilized active-duty endstrength of about 322,000, further increases in manpower cost rates could force the Navy to reduce endstrength in the future.

Issues

Given that the current shipbuilding plan appears to expand the size of the surface force at a time when the Navy is under pressure to stabilize manpower costs, there are concerns as to whether the Navy will be able to adequately man the future surface force. Commander, Naval Surface Force, U.S. Atlantic Fleet, asked CNA to investigate these concerns. In particular, he asked us to address the following questions:

- How will surface fleet manpower requirements change over the next three decades?
- Which surface communities will see significant changes in their afloat manpower requirements?
- If significant changes occur, what problems could they pose?

In addition, late in the study, our sponsor asked us to analyze the impact of pending changes to the surface force structure program that were included in the Navy's most recent budget submission.

Organization of document

The remainder of the document comprises four sections. The first describes the methodology, rules, and assumptions that we used in estimating future surface force manpower requirements. The second section defines the future surface force structure scenarios that we examined and reviews the manpower requirements of each ship class. It also examines sea-duty requirements for “non-ship” units of the surface force. The third section presents our estimates of the aggregate yearly manpower required to operate the future surface fleet. It presents both the total military requirements across all communities and the requirements of each enlisted and officer surface community. The fourth section contains our conclusions and recommendations.

Approach and methodology

In this section, we describe our methodology for generating estimates of future surface force manpower requirements. We begin by reviewing the Navy’s definitions of some manpower terms and then describing what we mean by future manpower requirements. Next, we describe how we calculated these requirements. We present our basic approach and discuss the rules and assumptions used in defining (1) the year-by-year inventory of ships and (2) the manpower requirements of individual ships.

What we mean by *manpower requirements*

Our tasking

To analyze future surface force manpower requirements, we needed to calculate, by year for the next 30 years, the military manpower required to operate the Navy’s fleet of surface ships. We defined the surface fleet as consisting of all the types of surface ships that appear in the Navy’s 30-year shipbuilding plan. These include all surface combatants, aircraft carriers, amphibious ships, mine countermeasure ships, command ships, and submarine tenders, as well as the Navy’s logistics and support ships operated by the Military Sealift Command (MSC).⁵

For this study, we were interested only in manpower requirements for active-duty military personnel (i.e., regular active duty and Full-Time Support (FTS)). We did not include requirements for Selected Reserve (SELRES), civilian, or contractor personnel. In addition,

5. We do not include Patrol Coastal (PC) ships because they are not in the 30-year shipbuilding plan. We do, however, look at the near-term manpower requirements of these ships when examining the surface force’s “non-ship” afloat manpower requirements.

because our tasking called for analyzing future manpower requirements for individual officer and enlisted communities, we needed to calculate both the quantity (number of sailors) and quality (types of sailors) of future manpower requirements. For enlisted personnel, we defined quality by rating, enlisted management code (EMC), and paygrade.⁶ For officers, we defined quality by designator and paygrade.

Defining manpower requirements

According to OPNAVINST 1000.16K [3], the term *manpower requirements* means the number of personnel required to perform the Navy's work and deliver the specified capability. Each manpower requirement equates to a specific manpower space, which is assigned qualifiers that define the duties, tasks, and functions to be performed and the specific skills and skill level required to perform the delineated functions. The Navy Manpower Analysis Center (NAVMAC) determines a ship's manpower requirements based on the projected missions and operating conditions that are specified in its Required Operational Capabilities/Projected Operational Environment (ROC/POE) document.

Manpower requirements become *authorized positions* if they are supported by resources (i.e., funded).⁷ Only authorized positions, not requirements, send personnel demand signals to the accession, training, and distribution systems [3]. Because not all requirements become authorized positions and because the Navy builds its personnel inventories to fill authorized positions (as we will describe in the next section), we based our estimates of future manpower requirements on ships' authorized positions. For simplicity, however, we still refer to our estimates as future manpower requirements (and not future authorized positions).

6. The Navy manages and details its enlisted force by communities; the enlisted management codes, which are based on combinations of enlisted ratings, functional area codes, and Navy Enlisted Classifications (NECs), define these communities.

7. Resources are provided through the Planning, Programming, Budgeting, and Execution System (PPBES).

We should emphasize that we are looking at ship requirements only (i.e., how many and what types of sailors are required to operate the ships). We do not address the issue of how big the Navy's personnel inventory needs to be to ensure that these requirements can be continuously filled with the right types of sailors.

Calculating future manpower requirements

Our approach for calculating future manpower requirements is quite simple. For each future year, we take the inventory of ships that will be part of the active fleet and sum their manpower requirements. The more difficult part was defining the year-by-year inventory of surface ships and the manpower required to operate each ship.

Defining the future surface ship force structure

Our sponsor asked us to estimate manpower requirements associated with the Navy's most recent 30-year shipbuilding and ship retirement plans. These plans define, by ship type, the number of ships that will enter the active fleet each year and the number of ships that will leave (i.e., retire from) the active fleet. We use this information along with the current inventory of ships (at the start of FY 2012) to define the inventory of ships, by year, out to 2041.⁸

For existing ships, we defined the future inventory by individual ship (i.e., at the hull level).⁹ The ship retirement schedule, however, only specifies the number of ships in a class that will be retired in a given year. To map these retirements to specific ships, we go in reverse order from when the ships entered the fleet (i.e., we retired DDG-51 before DDG-52, DDG-52 before DDG-53, and so on).¹⁰

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8. As we will describe later, for some ship types we define the inventory in terms of crews, not ships.
 9. The reason for this is that manpower requirements can vary significantly among ships of the same class.
 10. We used this approach unless we had information on the retirement schedule of individual ships (e.g., we use programmed billet data in the Total Force Manpower Management Systems to define retirements that are scheduled to occur within the Future Year Defense Plan).

For future ship classes (i.e., ships that will enter the fleet beyond the Future Year Defense Plan (FYDP)), we define the yearly inventory at the class level. In other words, we define a single ship to represent the class and use that ship to define the future inventory for that class. For a given year, then, an existing ship is either in the inventory or not, whereas a future ship (because it represents an entire class of ships) can have more than one ship in the inventory for any given year.

Defining manpower requirements for individual ships

Once we defined the current and future inventory of ships, the next step was to define the manpower requirements of each ship in the inventory. For current ships, we used authorized billets defined in the Total Force Manpower Management System (TFMMS) to represent the ship's manpower requirement. TFMMS contains authorized billets for the current fiscal year (CFY) and programmed authorized billets for each of the next seven years—out to the end of the FYDP. Thus, it contains eight sets of manpower requirements (CFY through FY+7).

A ship's authorized billets can change over time. For example, table 1 shows the number of programmed authorized billets for six DDG-51 ships from FY 2012 to FY 2018. In FY 2012, all these ships were authorized either 270 or 271 billets; however, over the next two years, the number of authorized billets increases on all these ships. The number of authorized billets on DDG-60 grows to 292, whereas the number on DDG-63 grows to 304.¹¹ To account for these changes in our future year projections, we include all eight sets of requirements in our manpower requirements data for each ship.

For ships that are not currently in the fleet and whose manpower requirements are not yet in TFMMS, we used one of the following options: If projected requirements exist, such as a preliminary ship manning document or manpower estimate report, we derived the ship's requirements from these sources; if no projections exist, we

11. These increases reflect a recent Navy decision to buy back some of the manpower cuts to DDG ships that were taken as part of the optimal manning initiative.

selected a ship from the current inventory that we felt would have comparable manpower requirements and used those requirements as an approximation.

Table 1. Change in authorized positions on DDGs over the FYDP

Hull no.	CFY	FY+1	FY+2	FY+3	FY+4	FY+5	FY+6	FY+7
DDG-60	271	283	292	292	292	292	292	292
DDG-61	271	280	292	292	292	292	292	292
DDG-62	270	294	303	303	303	303	303	303
DDG-63	271	292	304	304	304	304	304	304
DDG-66	271	286	295	295	295	295	295	295
DDG-64	270	282	294	294	294	294	294	294

For all ships (current and future), we defined manpower requirements by officer/enlisted, rating/designator, EMC (enlisted only), and paygrade.

Aggregating requirements across all ships

To calculate the yearly manpower requirement across all surface ships, we simply sum the manpower requirements of all the individual ships in the inventory for that year. We developed a Microsoft Excel application to perform these calculations. The tool contains a spreadsheet in which we define the year-by-year inventory of ships. In this spreadsheet, we also specify, by year, which of the eight sets of ship manpower requirements (i.e., the programmed billets for the eight fiscal years in TFMMS) to use in calculating total fleet requirements for that year. For our calculations, we used the ship's authorized billets for FY 2012 to calculate FY 2012 fleet requirements, their authorized billets for FY 2013 to calculate FY 2013 fleet requirements, and so on. We use the ship's authorized billets for FY 2018 to calculate fleet requirements for all future years beyond the FYDP.

Under this approach, manpower requirements for a ship start in the year in which the ship enters the active fleet (i.e., becomes part of the inventory). Consequently, we do not include a ship's manpower requirements for the year in which that ship retires from the fleet. Thus, our estimates reflect end-of-year requirements.

Rules and assumptions

While this approach allows us to determine future manpower requirements for most ships, we needed to make some adjustments and assumptions to address unique situations, such as rotational crewing for ships and the stand-up of precommissioning crews.

Rotational crewing

Most Navy ships have a single, assigned crew that stays with the ship whether it's in homeport or at sea. Defining and projecting future manpower requirements for these ships is straightforward. The ship manpower requirements in TFMMS belong to a single unit identification code (UIC). For example, all the manpower requirements for USS *Leyte Gulf* (CG 55) are assigned to UIC 21388.

For some ships, however, the Navy rotates crews so that more than one crew operates a single ship. The Navy currently uses several crew rotation schemes. The dual crew rotation scheme (also known as Blue/Gold crewing) assigns two crews to a ship and these crews take turns operating the ship. The Navy uses this crewing scheme on its ballistic missile submarines. It also uses a Blue/Gold scheme to man the military detachments that deploy with the ocean surveillance (i.e., T-AGOS) ships. Under a multicrew rotation scheme, crews are not permanently assigned to specific ships; rather, they rotate among several ships. For example, the Navy expects to use a 3-2-1 multicrew scheme for littoral combat ships (LCSs) and mission modules [4].¹²

In calculating future manpower requirements, we account for crew rotation in two ways. For ships that use a Blue/Gold scheme, we define the ship's manpower requirements as consisting of both crews (i.e., we add the authorized billets for both the Blue and Gold crews assigned to each ship). For ships that use a multicrew scheme, we define the yearly inventory of crews instead of ships. For LCS, we go one step farther and define the yearly inventories of both the shipframe crews and the mission module crews based on the crew

12. A 3-2-1 manning construct means three crews for every two ships with one ship deployed.

phasing schedule in the LCS Manpower Estimate Report (MER) [4].¹³

Maintenance support crews on submarine tenders

Submarine tenders have a composite ship crew—both civilian and military personnel. These ships also deploy with a maintenance support crew (M/SC), which performs the maintenance on submarines. We include the active duty military manpower requirements for the M/SC in our manpower requirements for each submarine tender.

Precommissioning crews

The Navy's shipbuilding plan specifies when new construction ships will be commissioned and enter the active fleet. We've described how we account for the manpower requirements once a ship enters the fleet. But the Navy also assigns precommissioning crews to new construction ships. These crews can form once the keel is laid and continue until the ship is commissioned. They consists of personnel assigned to the precommissioned unit (PCU), which is located at the shipyard, and the precommissioned detachment (PCD), which is located at the ship's homeport. Crew phasing plans specify the manpower requirements (size and composition) of these crews [5].¹⁴

We account for precommissioning crews in our future manpower estimates by defining a precommissioning crew for each new construction ship and including those requirements in our totals for the year before the ship enters the fleet. For example, if two DDG-51 Flt III ships are scheduled to enter the fleet in 2020, we include the manpower requirements for two precommissioning crews in 2019.

We derive the manpower requirements for precommissioning crews from TFMMS data. For ships that will enter the fleet in the next seven years and whose manpower requirements are in TFMMS, we use

13. We discuss crew schedules for LCSs and mission modules in more detail later in the report.

14. Crew phasing plans usually outline an incremental buildup of the pre-commissioning crew.

programmed requirements for the year before the ship's commissioning date. For future ships not in TFMMS, we define the requirements using precommissioning crews for similar existing ships.

Input data

Having just described how we calculate future manpower requirements, we now review the data used to generate our estimates. Recall that our key data are the yearly inventory of surface ships and crews and the individual manpower requirements for each. In addition, at the end of this section, we briefly examine the manpower requirements for operational non-ship surface force units.

In reviewing the input data, we categorize the Navy's fleet of surface ships as either military crewed or civilian crewed. The former comprises all of the surface combatants, carriers, and amphibious ships as well as mine countermeasure ships, command ships, and submarine tenders; the latter group contains ships operated by the MSC.¹⁵

Future surface ship force structure

Our original tasking for this study was to examine the manpower requirements to support the future surface fleet as defined in the PB12 shipbuilding plan. Later, our sponsor asked us to analyze the impact of pending changes to the surface force structure program that were included in the Navy's most recent budget submission.

PB12 shipbuilding plan

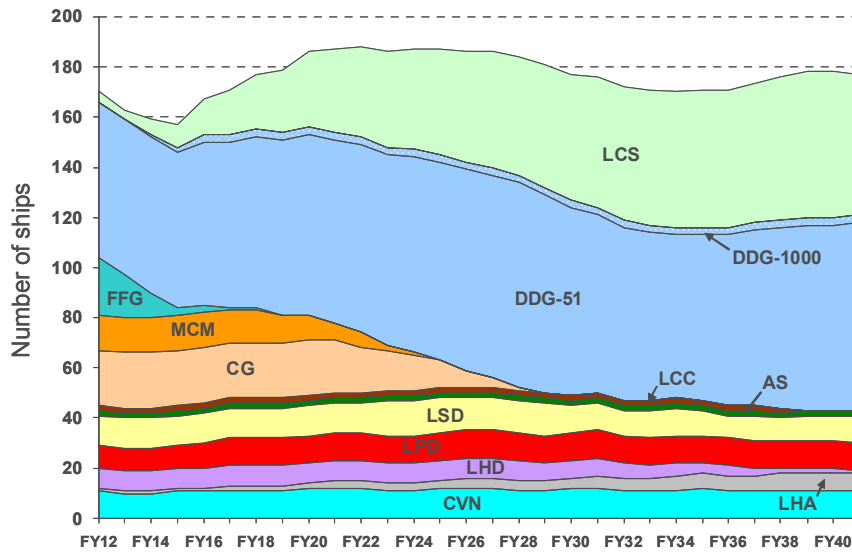
In May 2011, the Secretary of the Navy submitted to Congress an updated 30-year shipbuilding plan based on the FY 2012 President's Budget. This plan outlines the Navy's future shipbuilding plan (i.e., when new ships are scheduled to enter the fleet) and the ship retirement schedule, noting for each ship class, the number of ships scheduled for decommissioning each year.

15. Even though command ships (LCCs) and submarine tenders (ASs) are operated by MSC, we put them in our military-crewed category because they have large numbers of permanently assigned military personnel.

Military-crewed ships

Figure 1 shows the force structure plan for military-crewed ships over the next 30 years. It shows, by ship class, the number of ships that are projected to be in the fleet each year.¹⁶

Figure 1. Inventory of military-crewed ships in PB12 plan



Currently, there are 170 military-crewed ships in the active fleet. Over the next three years, this number will drop to 157 as the Navy retires most of its remaining guided missile frigates (FFGs). In 2016, the fleet begins to grow as new DDGs and LCSs enter the fleet. This buildup continues through 2022 with the fleet increasing to 188 military-crewed ships. From 2022 to 2027, the size of the fleet remains at this level as new DDGs and LCSs offset the retirements of the MCM and CG ships. Starting in 2028, the fleet will experience a period of downsizing as the number of ships drops to 170 by 2034. This is followed by another, albeit smaller, growth period during which the size of the fleet climbs back to 179 ships by 2040.

16. Appendix A provides the year-by-year inventory numbers for each ship class.

In terms of force structure composition, figure 1 shows that the number of amphibious ships and aircraft carriers remains fairly constant—ranging between 40 and 50 ships—over this time period. It is the surface combatants that exhibit the greatest change, with the FFGs, MCMs, and CGs being replaced by new DDGs and LCSs. And it is the timing of these DDG and LCS acquisitions relative to the retirement of the FFGs, CGs, and MCMs that causes most of the fluctuation in overall fleet size.

LCS seaframe mission module crews. Earlier we discussed the fact that, because the Navy intends to use rotational crewing to man LCS ships, we needed to base our estimates of future manpower requirements on the number of crews, not ships. Two types of crews support LCS: a seaframe crew that operates the ship and a mission module detachment crew that operates the installed mission module equipment. LCS ships can be configured with one of three mission modules: anti-submarine warfare (ASW), surface warfare (SUW), or mine warfare (MIW). Consequently, there are three types of mission module crews—each with its own manpower requirements.

The PB12 shipbuilding plan defines the number of LCS ships, not the number of seaframe or mission module crews, so we relied on the most recent LCS MER to compile the yearly number of seaframe and mission module crews [6]. This report contains yearly projections for buying these crews out to 2030. We extended these projections to 2041 by extrapolating the number of crews based on the number of LCS ships in the inventory.

Figure 2 shows the projected number of seaframe crews by year. For reference, it also shows the number of LCS ships in the PB12 plan. Figure 3 shows the number of mission module crews by year. The blue, tan, and green portions of each column represents the number of ASW, SUW, and MCM crews, respectively. For reference, it also shows the number of LCS ships.¹⁷

17. The LCS mission module crew schedule depends on the mission module schedule, which, in turn, is based on both warfighting analysis and the LCS acquisition schedule [7].

Figure 2. LCS shipframe crew schedule

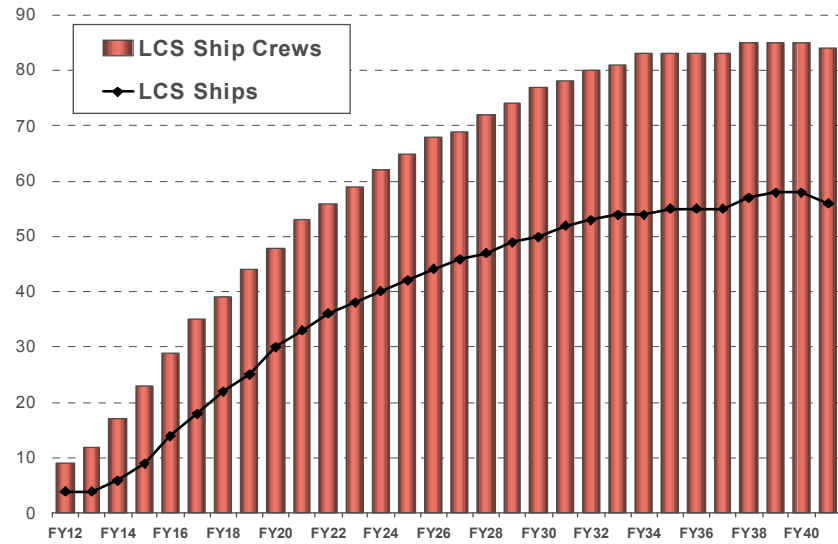
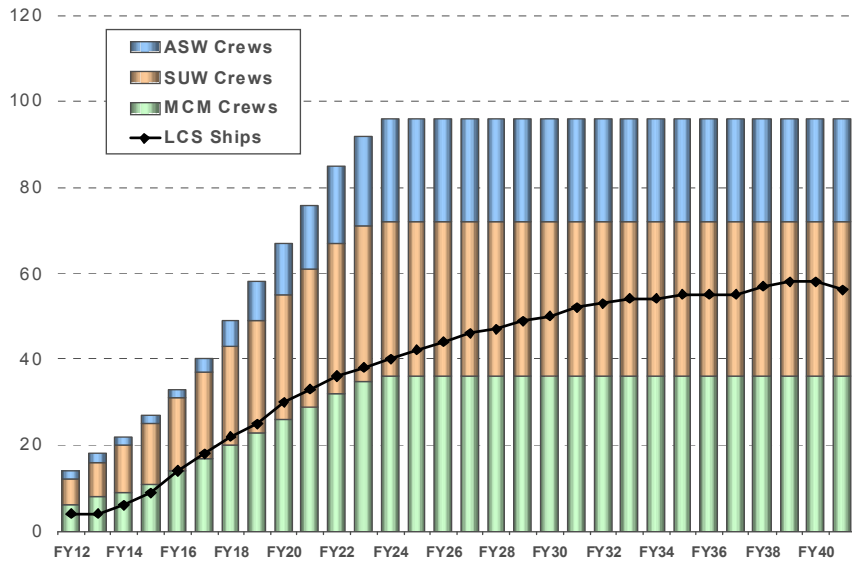


Figure 3. LCS mission module crew schedule



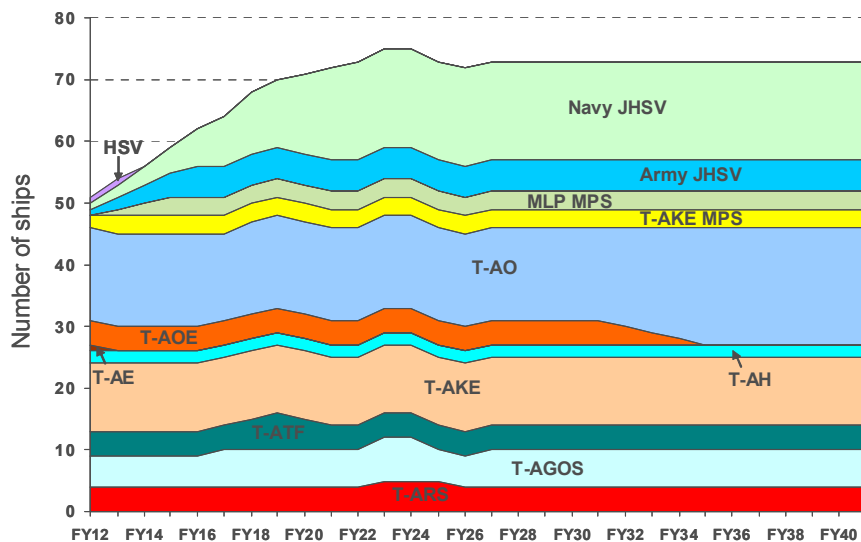
Precommissioning crews. Figure 1 showed the number of ships in the active fleet for each year. As we discussed, the Navy assembles pre-commissioning crews for new ships entering the fleet. We account for

these manpower requirements in our projections by defining pre-commissioning crews and adding these crews to the inventory in the year before the ship enters the fleet. For our projections, we included pre-commissioning crews for new ships of the following classes: CVN-78, DDG-51, LHA 8, and LSD(X). We did not include separate pre-commissioning crews for LCS ships as we assumed the necessary lead time for these crews to train and qualify was already accounted for in the crew-buy schedule outlined in the LCS MER.

Civilian-crewed ships

Figure 4 show the PB12 force structure plan for civilian-crewed ships over the next 30 years. The current inventory is 51. Over the next 12 years, the construction plan will increase this to 75 ships. The acquisition of 21 Joint High Speed Vehicles (JHSVs)—16 Navy variants and 5 Army variants—accounts for nearly all of this growth.

Figure 4. Inventory for civilian-crewed ships for the PB12 plan



Proposed changes to the PB12 force structure program

Because of pending DOD budget cuts, the Navy is reassessing its future surface force structure program. In its recent budget submission for PB13, the Navy includes changes to the PB12 force structure

program. These changes consist of accelerating the retirements of seven CGs (four in 2013 and three in 2014) and two LSDs (both in 2014). Figures 5 and 6 show how the proposed PB13 changes reduce the yearly inventory of CGs and LSDs, respectively, relative to the PB12 plan.

Figure 5. Effects of proposed PB13 changes on yearly CG inventory

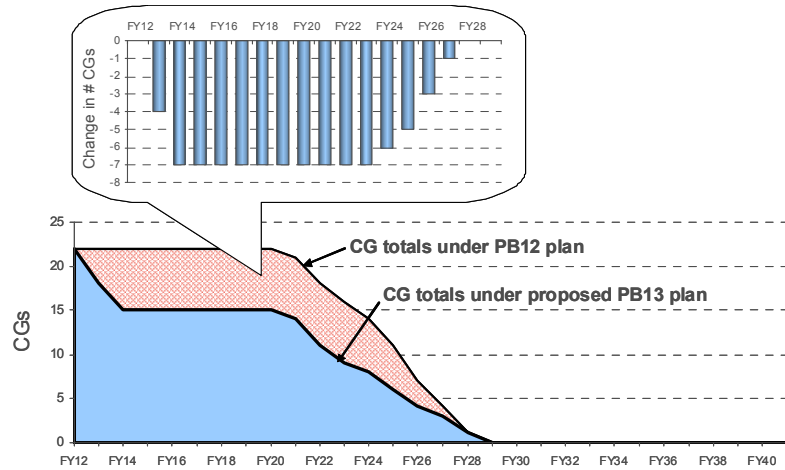
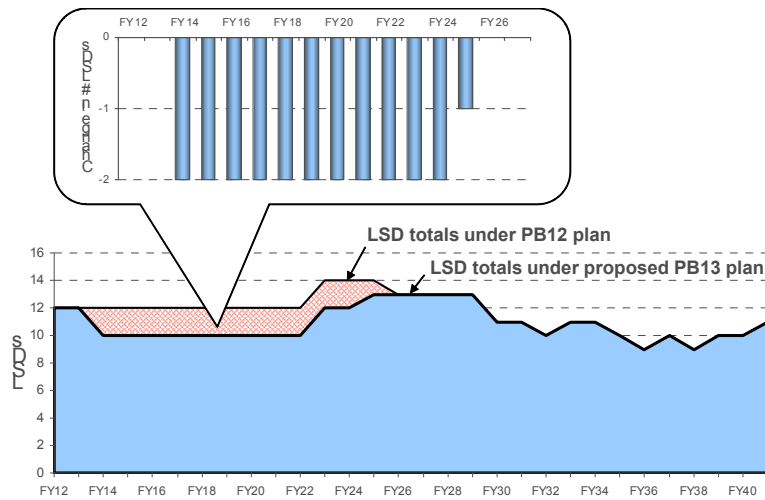


Figure 6. Effects of proposed PB13 changes on yearly LSD inventory



Individual ship manpower requirements

To calculate future manpower requirements for the entire surface fleet, we compiled manpower requirements for each ship (current and future) in the fleet. We review these requirements next.

Military-crewed ships

Active ships

Table 2 shows information on manpower requirements for ships currently in the active fleet. The first column lists the ship class. The second column indicates whether we based future requirements on the number of ships or crews. The third column gives the active-duty military manpower requirement (i.e., authorized billets) for a single ship or crew in that class,¹⁸ and the last column gives the source of these manpower requirements. As noted, we compiled the requirements for all current ships from TFMMS.¹⁹ For the submarine tenders, we include the military manpower requirements for both the ship crew and the maintenance support crew (M/SC).

Future ships

Manpower requirements for most future ships have not yet been defined; therefore, we use existing ships to approximate their requirements. Table 3 shows the ships we selected to represent these future ships. The first three columns are the same as in table 2. Column 4 shows the first year that a ship in the class will enter the fleet, and column 5 show the source of these requirements. For future carriers, we used manpower requirements specified in the Preliminary Ship Manning Document (PSMD) for CVN-78 [8].²⁰

18. Requirements can vary among ships of the same class; thus, the range denotes the smallest and largest crew size.

19. For the LCS seaframe and mission module crews, we compiled manpower requirements from data in the LCS MER and in TFMMS.

20. The aviation requirements officer in N12 told us that the billet requirements for CVN-78 won't be entered into TFMMS until the billet requirements for the CVN-65 are removed.

Table 2. Manpower requirements for military-crewed ships^a

Class	Ship/crew	Billets	Ship/crew	Source
CVN	Ship	2,635-3,191	Ship	TFMMS
CG	Ship	317-326	Ship	TFMMS
DDG-51	Ship	290-304	Ship	TFMMS
DDG-1000	Ship	120	Ship	TFMMS
FFG	Ship	186-187	Ship	TFMMS
LCS	Crew	40	Crew	TFMMS/MER
LCS Modules	Crew	15-19	Crew	TFMMS/MER
MCM	Ship	81-82	Ship	TFMMS
LHD	Ship	1,036-1,087	Ship	TFMMS
LPD	Ship	357-369	Ship	TFMMS
LSD	Ship	310-365	Ship	TFMMS
LCC	Ship	158-597	Ship	TFMMS
AS	Ship	133-169	Ship	TFMMS
AS M/SC	Crew	358-938	Crew	TFMMS

a. LCC and AS ships have a civilian crew component that is not shown.

Table 3. Manpower requirements for future military-crewed ships

Class	Ship/crew	Billets	1 st year in fleet	Source
CVN-78	Ship	2,635	2015	PSMD - CVN-78
LHA 7-12	Ship	1,041	2017	TFMMS - LHA-7
DDG-51 Flt IIA	Ship	300	2016	TFMMS - DDG-113
DDG-51 Flt III	Ship	300	2021	TFMMS - DDG-114
DDG-51 Flt IV	Ship	300	2037	TFMMS - DDG-115
LSD(X)	Ship	313	2023	TFMMS - LSD-52
AS(X)	Ship	133	2029	TFMMS - AS-39
AS(X) M/SC	Crew	53	2029	TFMMS - AS-39 M/SC

As we will point out in our results, the decision to use AS-39 to represent the manpower requirements for the next-generation submarine tender (and its M/SC) has important manpower implications for some enlisted communities (viz, Hull Maintenance Technician (HT) and Machinery Repairman (MR) communities). Of the two current tenders, AS-39 has significantly fewer active-duty military manpower requirements (186 vs. 994 positions) than AS-40 because the requirements for the AS-39 maintenance crew rely much more on SELRES

and civilian personnel. The decision to use AS-39 to represent the manpower requirements of future submarine tenders, which was approved by our sponsor, is in line with the Navy’s objective of reducing active-duty military manpower requirements for future ships.

Precommissioning crews

Table 4 show the manpower requirements for the precommissioning (precom) crews and the source of these requirements. For example, the precom crew for CVN-78 ships is based on the requirements for the precom crew for CVN-77, as defined in TFMMS for 2007.

Table 4. Manpower requirements for precommissioning crews^a

Class	Billets	Source
CVN-78 precom	1,255	TFMMS - FY 2007 BA ^b for CVN-77
DDG-51 Flt IIA precom	133	TFMMS - FY 2014 BA for DDG-113
DDG-51 Flt III precom	138	TFMMS - FY 2014 BA for DDG-114
DDG-51 Flt IV precom	139	TFMMS - FY 2014 BA for DDG-115
LHA 7-12 precom	519	TFMMS - FY 2015 BA for LHA-7
LSD(X) precom	56	TFMMS - FY 1997 BA for LSD-52

a. As discussed earlier, we did not include precom crews for LCS ships and mission modules.

b. BA = billets authorized.

Civilian-crewed ships

All MSC ships, except LCC and AS ships, are crewed by civilians—either civil service mariners (who are federal employees) or commercial mariners.²¹ Most of these ships are also assigned a small group of military personnel. These military departments (MILDEPTs), which are manned almost entirely by active duty personnel, usually perform communication and supply functions.²²

21. T-AGOS and HSV are operated by commercial mariners.

22. There is one exception; the maintenance support crews on submarine tenders have a significant SELRES manpower requirement.

Table 5 contains information about the manpower requirements of these MILDEPTs. For each ship class, it denotes whether the ships have a MILDEPT assigned and, if they do, the MILDEPT's manpower requirements defined in terms of authorized billets. For example, the Dry Cargo/Ammunition (T-AKE) ships have a MILDEPT that consists of 11 authorized billets.

Table 5. Military manpower requirements for MILDEPTs on civilian-crewed ships

	Class	MILDEPT billets	Notes
Combat Logistics Fleet	Fast Combat Support Ship (T-AOE)	-	Replaced MILDEPTs with CIVMARs
	Dry Cargo/Ammunition Ship (T-AKE)	11	Plan to replace MILDEPTs with CIVMARs by end FY13
	Fleet Replenishment Oiler (T-AO)	3	Plan to replace MILDEPTs with CIVMARs by end FY13
	Rescue/Salvage Ship (T-ARS)	4	Plan to replace MILDEPTs with CIVMARs by end FY13
	Fleet Ocean Tug (T-ATF)	4	Plan to replace MILDEPTs with CIVMARs by end FY13
	Hospital Ship (T-AH)	59	Military manpower requirements will transfer from BUMED to MSC in fall 2011
	Ammunition Ship (T-AE)	1	Ship to leave inventory in FY12
Fleet Support Ships	Ocean Surveillance Ship (T-AGOS)	20-32	Blue/gold crew for each ships (Fleet owns manpower requirements)
	Dry Cargo/Ammunition Ship (T-AKE MLP)	-	Military support will be USMC MAGTAF group and Navy special Beach Group units (not MSC requirements)
	Mobile Landing Platform (MLP)	-	Military support will be USMC MAGTAF group and Navy special Beach Group units (not MSC requirements)
	High-Speed Vessel (HSV)	40	Blue/gold crew; ship to leave service after FY13
	Joint High Speed Vessel (JHSV) - Navy	-	MILDEPTs assigned as adaptive force packages (manpower to be provided by existing commands)
	Joint High Speed Vessel (JHSV) - Army	-	Unknown Navy manpower requirements

In discussions with MSC personnel, we were told that current plans call for replacing the MILDEPTs on the T-AOE, T-AKE, T-AO, T-ARS, and T-ATH ships with civil service mariners by the end of FY 2013. Accordingly, in our calculations, we include military manpower requirements for these ships through FY 2013 only.

The current concept of operations for the prepositioning ships (i.e., T-AKE MLP and MLP) has the military support to these ships

provided by a Marine Air-Ground Task Force (MAGTF) or a Naval Beach Group (NBG) unit. Because the military manpower to these ships will be provided from existing commands, we do not include these requirements in our projections.

The same rationale applies to the Joint High Speed Vessels. The military support to these ships will be provided by adaptive force packages. The manpower for these packages will come from existing commands; therefore, they do not generate a separate requirement for permanently assigned personnel.

Manpower requirements for non-ship surface force units

Although our primary focus is on the manpower required to operate the fleet of surface ships, we also examined the manpower requirements for operational non-ship units of the surface force. These units include afloat staffs, NBG units, Patrol Coastal (PC) ships, and overseas Aegis Ashore sites. All these units have manpower requirements that are considered sea-duty assignments for rotational purposes.

In examining the manpower requirements for these units, we do not attempt to project future requirements based on the 30-year ship-building plan. Instead, for afloat staffs, NBG units, and PC ships, we examine current and near-term manpower requirements based on programmed authorized positions across the FYDP in TFMMS. For Aegis Ashore sites, we examined the long-range manpower requirements to operate two overseas sites based on projections in the most recent Aegis Ashore MER [6].

Afloat staffs, NBG units, and PC ships

We examined manpower requirements for the following afloat staffs:

- Commander, carrier strike group (CCSG),
- Commander, destroyer squadron (COMDESRON)
- Commander, amphibious squadron (COMPHIBRON)
- Mine countermeasures squadron (MCMRON)
- LCS class squadron (LCS CLSRON)

- Military Sealift Fleet Support Command (MSFSC)
- Tactical Air Squadron (TACRON)

An NBG comprises three type of units that support amphibious operations:

- *Assault craft units*: These units operate, maintain, and provide assault craft for waterborne ship-to-shore movement during and after amphibious assault.
- *Beachmaster units*: These units support amphibious operations by controlling landing craft, lighterage, and amphibious vehicles in the vicinity of the beach from surf line to high water mark and by coordinating movement over the beach of equipment, troops, and supplies.
- *Amphibious construction battalions*: These units provide ship-to-shore transport of fuel, materials, equipment, and water in support of the Amphibious Ready Group (ARG), Marine Expeditionary Force (MEF), and Maritime Prepositioning Force (MPF) operations.

PC ships provide coastal patrol and interdiction surveillance. They support maritime homeland security missions and work jointly with the U.S. Coast Guard to help protect our nation's coastline, ports, and waterways from terrorist attack. These ships are also forward deployed to support Commander, Fifth Fleet operations [9].

Table 6 shows the FY 2012 sea-duty manpower requirements in TFMMS for afloat staffs, NBG units, and PC ships.²³ It shows the requirements for each surface community and the total requirement for all other communities. Table 7 shows the aggregate requirements for each of these three non-ship categories in 2012 and their projected requirements in 2018. Future requirements for NBG units come directly from TFMMS.

Future requirements for afloat staffs are based entirely on TFMMS data with one exception: LCSRON. As more LCSs enter the fleet, the

23. Appendix B lists the activities that we included in each of these categories along with their manpower requirements.

Table 6. FY 2012 sea-duty manpower requirements for non-ship units

EMC	FY 2012 authorized billets			Total
	Afloat staffs	NBG units	PC ships ^a	
BM	26	377	39	442
ETSW	18	48	22	88
FC	42	0		42
FC Aegis		0		0
GM	7	19	33	59
MN		0		0
OS	275	53	26	354
QM	12	0	39	51
STG		0		0
DC	18	0	16	34
EMSW	3	51	35	89
EN	45	233	99	377
GS	20			20
GSE	5	104		109
GSM		255		255
HT		123	6	129
IC	1	0	14	15
MMSW	14	0		14
MR		2		2
LCAC		89		89
Other enlisted	825	844	65	1,734
URL- SWO	225	17	39	281
Other officer	468	84	17	569
Enlisted and officer total	2,004	2,415	450	4,869

a. These totals include the sea-duty manpower requirements for the PC maintenance support teams (86 billets).

Table 7. Projected FY 2018 sea-duty manpower requirements for non-ship units^a

Category	Billets	
	2012	2018
Afloat staffs	2,004	2,146
NBG units	2,415	2,415
PC ships	450	468
Total	4,869	5,029

a. Billets include all active duty officer and enlisted manpower requirements

Navy will establish a second LCSRON on the east coast and the manpower requirements for both LCSRONs will grow. The LCS community is currently working to develop a ROC/POE for the LCSRONs. Because their future requirements are not yet in TFMMS, we used preliminary estimates provided by COMNAVSURFPAC in defining the afloat staff requirements for 2018. Their estimates for the two LCSRONs define a total manpower requirement of 158 billets in 2018 (41 officer and 117 enlisted).

For the PC ships (and support teams), the current plan calls for the same number of ship crews, but the number of maintenance support teams will decrease from four to three. Two of these teams will be stationed overseas and will each have a manpower requirement of 25 sea-duty billets. The third team will be stationed in CONUS and will have only shore-duty requirements. The PC Class Squadron (PCRON) will also be based overseas and have a sea-duty requirement of 54 billets.

Aegis Ashore

Plans call for DOD to operate two Aegis Ashore sites—in Romania and Poland—to be deployed in 2015 and 2018, respectively. They will be operated and supported by a mix of military, government civilians, contractors, and host nation personnel. The Navy will provide all military personnel. Because our interest is in sea-duty manpower requirements, we divided Navy personnel into those who will work overseas on site and those who will provide support from continental U.S. locations. The Navy has defined all onsite positions to be Type 3–Overseas Duty, which, for rotational purposes, counts as sea duty.

The manpower requirements for these Aegis Ashore sites are not yet in TFMMS. Therefore, we used the most recent manpower projections in the Aegis Ashore MER to define the onsite requirements by rating, EMC, and paygrade by year out to 2041 [6]. Figure 7 shows the enlisted manpower requirements by community over this time-frame.²⁴ Nearly two-thirds of the requirements belong to the Master at Arms (MA) and FC Aegis communities.

24. Appendix B provides the Aegis Ashore year-by-year manpower requirements for all enlisted and officer communities.

Figure 7. Enlisted manpower requirements for Aegis Ashore sites

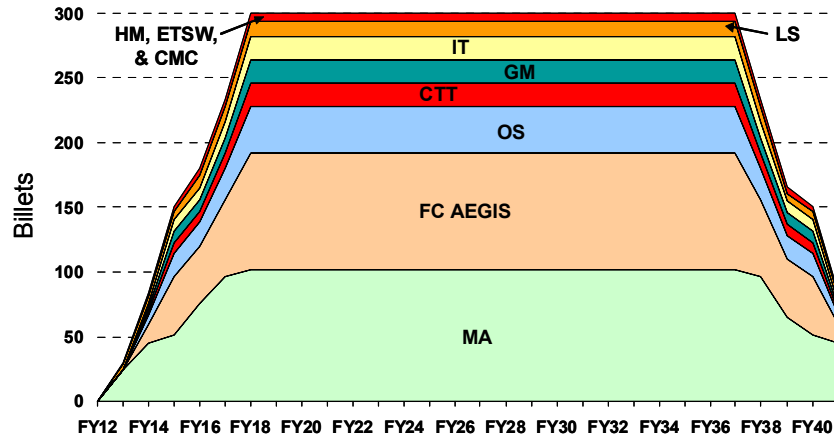


Table 8 shows the paygrade distribution of these requirements. For most communities, the requirements are relatively junior—at the E4 and E5 paygrades. The exceptions are the FC Aegis and Information Systems Technician (IT) communities, whose requirements are at the more senior E6 and E7 levels.

Table 8. Paygrade distribution of Aegis Ashore enlisted requirements

EMC	E4	E5	E6	E7	E8	Total
CMC					2	2
CTT		18				18
FC Aegis			54	36		90
GM		18				18
IT			18			18
OS		36				36
ETSW		2				2
HM	2					2
LS	4	4	2	2		12
MA	86	6	8	2		102

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Results

This section presents our projections of future surface force manpower requirements. Most of our discussion focuses on the requirements to support the force structure outlined in the PB12 plans, but we also show the impact of the proposed force structure changes that were included in the Navy's latest PB13 budget submission.

We present our projections from two perspectives. First, we examine the total military requirement—that is, the shipboard manpower requirements across all officer and enlisted communities. We then narrow our focus to the surface communities—examining the aggregate requirement across all these communities and then drilling down to examine the individual requirements of each community.

Total surface fleet manpower requirements

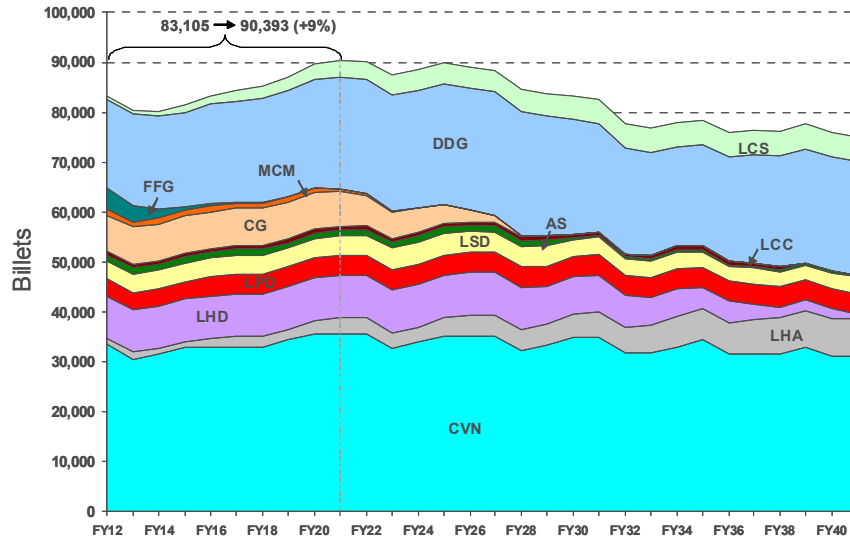
PB12 shipbuilding plan

Earlier we showed the year-by-year inventory of surface ships and LCS crews for the next 30 years based on the PB12 shipbuilding and ship retirement plans (see figures 1 through 4). Here we show the aggregate, year-by-year, manpower requirements (or endstrength equivalent) for these ships.

Military-crewed ships

Figure 8 shows our projections of the total manpower requirements (i.e., all active-duty (regular and FTS) officer and enlisted) for the military-crewed ships out to 2041. In 2012, these ships have a total requirement of 83,105 billets. This requirement drops below 80,000 billets in 2014 before increasing to 90,393 in 2021. Thus, relative to today's requirements, the PB12 ship plan increases the surface fleet's manpower requirements by almost 7,300 billets over the next decade—a 9-percent increase. Most of this increase results from the addition of 13 DDG ships, 32 LCS ships (and associated mission module crews), and 1 aircraft carrier during this time period.

Figure 8. Manpower requirements for military-crewed ships under the PB12 plan^a



a. Recall that we did not include manpower requirements for the PC ships in our projections.

Looking further into the future, the total requirement for all military-crewed ships will stay near 90,000 billets (with some fluctuation caused by changes in the number of carriers) through 2027. Then, in 2028, the total requirement begins to decline. This decline continues through 2033, after which the requirement levels off (fluctuating between 75,000 and 78,000 billets) out to 2041.

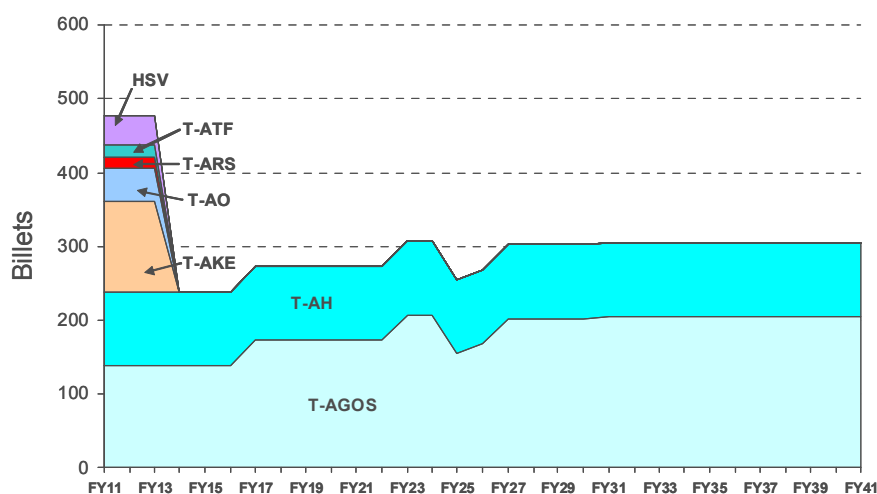
Figure 8 also shows the portion of the total manpower requirement that belongs to each ship class. On average, about 40 percent of the total requirement belongs to aircraft carriers, 23 to 25 percent to amphibious ships, and 35 to 37 percent to surface combatants.

Civilian-crewed ships

Figure 9 shows our projected manpower requirements for the military departments that support the Navy’s civilian-crewed ships. In 2012, these ships have a combined military manpower requirement of 478 billets. Under the current plan to replace the MILDEPTs with civilians in FY 2013 on the T-AKE, T-AO, T-ARS, and T-ATF ships; this total will decrease by roughly half. Beyond 2013, only the hospital

ships (T-AH) and ocean surveillance ships (T-AGOS) will have military manpower requirements.

Figure 9. Military manpower requirements for civilian-crewed ships



Even though the military requirements on these ships are extremely small compared with those of military-crewed ships, it is important to include them in our projections because they can be meaningful for some communities. For instance, all the positions in the T-AGOS MILDEPT are for STGs, and, as we will show later, these requirements represent a significant portion of the total STG afloat requirement.

Impact of proposed PB13 force structure changes

Earlier, we showed how proposed PB13 changes to the force structure program affect the future size and shape of the surface fleet.²⁵ Figures 10 and 11 show the effects of these changes on total manpower requirements for military-crewed ships. Figure 10 shows the total requirement, by ship class, for a future force structure that includes these changes. For comparison, it also shows the total requirement for the baseline PB12 force structure. Figure 11 shows the yearly

25. Recall that these force structure cuts consist of retiring four CGs in 2013, three CGs in 2014, and two LSDs in 2014 (see figures 5 and 6).

manpower reductions that will result from these changes. The blue and red portions of the columns represent reductions in enlisted and officer requirements, respectively. The largest reductions occur from 2014 to 2023, when annual requirements will drop by almost 3,000 billets.

Figure 10. Manpower requirements on military-crewed ships under the proposed PB13 force structure plan

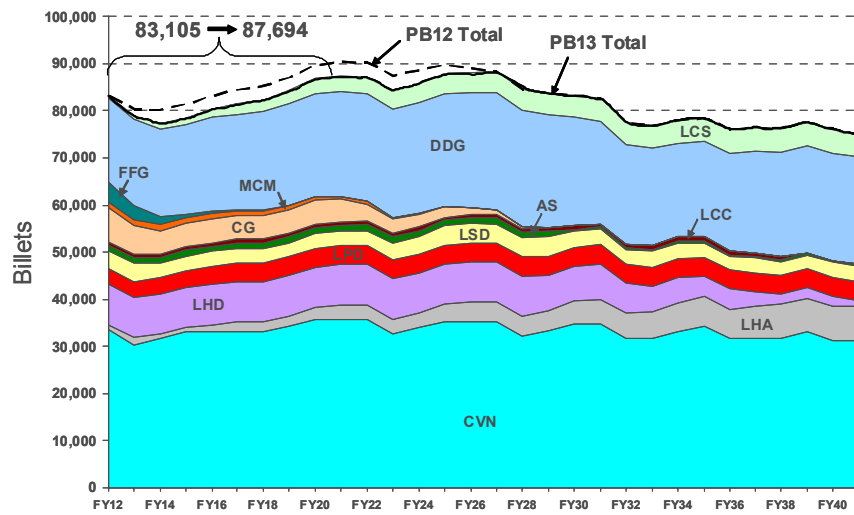
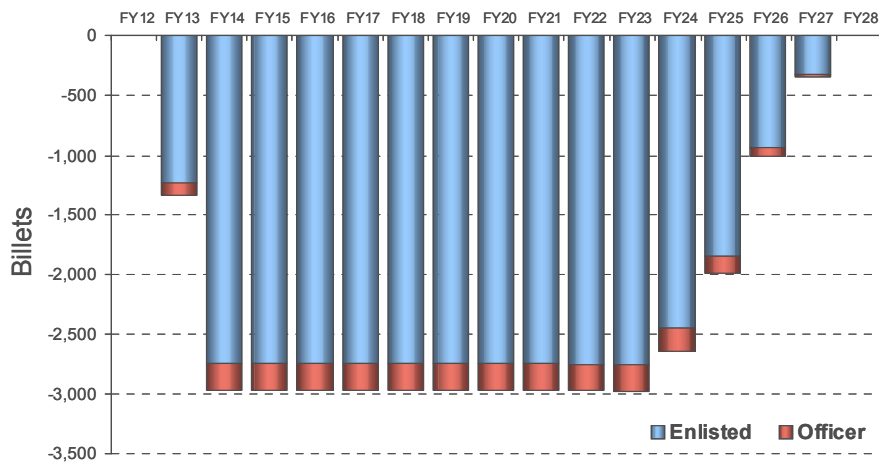


Figure 11. Manpower reductions due to pending force structure program changes



These early retirements will cause a larger drop in requirements over the next two years—6,093 billets compared with 3,121 billets under the PB12 plan. They also will cause a smaller increase over the next decade. Total manpower requirements will only grow to 87,694 billets by 2021 (a 5-percent increase from current levels) compared with 90,393 billets under the PB12 plan.

Surface community requirements

Commander, Naval Surface Force, U.S. Pacific Fleet (COMNAV-SURFPAC) and Commander, Naval Surface Force, U.S. Atlantic Fleet (COMNAVSURFLANT) are responsible for articulating manning requirements for the surface communities. Accordingly, in this section, we examine the future manpower requirements of these communities.²⁶

Enlisted surface communities encompass all the surface combat systems/operations (CS/OPS) and surface engineering (ENG) communities. Surface CS/OPS communities include the following:

- Fire Controlman (FC)
- Fire Controlman, Aegis Weapon System (FC Aegis)
- Operations Specialist (OS)
- Electronics Technician, Surface Warfare (ETSW)
- Gunner's Mate (GM)
- Sonar Technician, Surface (STG)
- Mineman (MN)
- Quartermaster (QM)
- Boatswain's Mate (BM)

26. Although we do not examine individual requirements for the other (i.e., non-surface) ratings/communities in this section, we did include their requirements in the previous section where we reported total military requirements across all officer and enlisted communities.

Surface ENG communities follow:

- Engineman (EN)
- Electrician's Mate, Surface Warfare (EMSW)
- Damage Controlman (DC)
- Hull Maintenance Technician (HT)
- Interior Communications Electrician, Surface Warfare (IC)
- Gas Turbine Systems Technician, Mechanical (GSM)
- Gas Turbine Systems Technician, Electrical (GSE)
- Machinist's Mate, Surface Warfare (MMSW)
- Machinery Repairman (MR)

On the officer side, we restricted our look to the Surface Warfare officer (SWO) community.

Aggregate requirements across all surface communities

PB12 plan

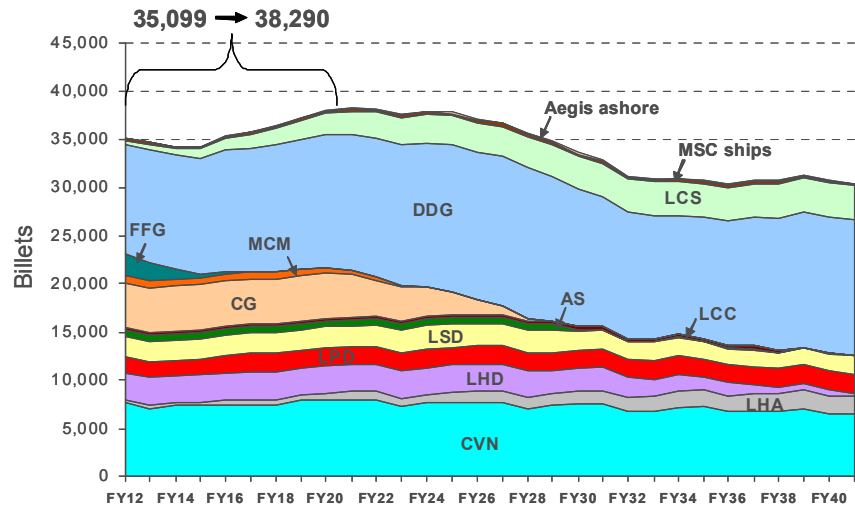
Figure 12 shows the total surface force manpower requirement (for all surface ships and the two Aegis Ashore sites) over the next 30 years for the enlisted surface communities²⁷ and the portion of the total requirement that belongs to each ship class. Overall, the trend is similar to that for total military requirements, but the totals are less than half (i.e., the surface communities account for about 45 percent of the total enlisted requirement). The PB12 plan will increase active-duty military manpower requirements for these communities by almost 3,200 positions (or 9 percent) over the next decade.

Proposed PB13 plan

Figures 13 and 14 show the effects of the proposed PB13 force structure changes on shipboard (and Aegis Ashore) enlisted manpower requirements. Figure 13 shows the future requirements across all

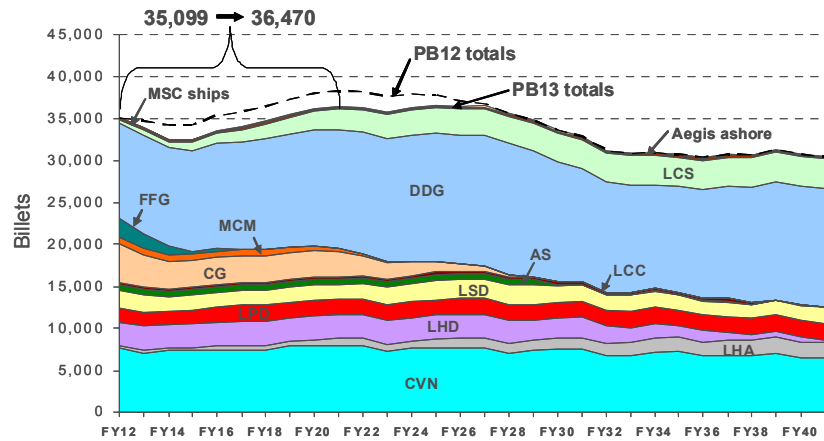
27. Appendix C shows the year-by-year requirements for each enlisted surface community under the PB12 plan.

Figure 12. Surface fleet manpower requirements for enlisted surface communities under the PB12 plan^a



a. Includes military requirements for civilian-crewed ships and Aegis Ashore sites

Figure 13. Surface fleet manpower requirements for enlisted surface communities under the proposed PB13 plan^a



a. Includes military requirements for civilian-crewed ships and Aegis Ashore sites

surface communities under this plan by ship class. For comparison, it also shows the total requirement for the baseline PB12 force structure.²⁸

Figure 14. Impact of proposed PB13 changes on enlisted shipboard manpower requirements

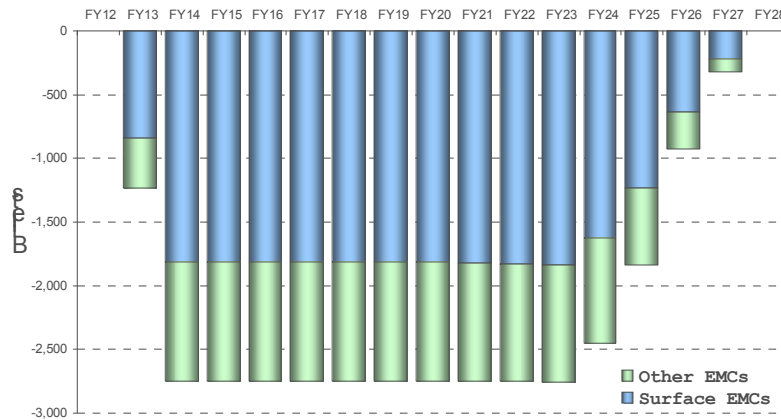


Figure 14 shows the reduction in enlisted billets caused by the proposed PB13 force structure changes. The blue portion of each column represents billet reductions in the surface communities; and the green portion represents billet reductions in the other (i.e., non-surface) communities. From 2014 to 2023, these changes will reduce annual manpower requirements across the surface communities by over 1,800 billets.

These early retirements will cause a larger drop in surface community requirements over the next two years—2,676 billets compared with 858 billets under the PB12 plan. They also will reduce the growth in billets over the next decade. Total manpower requirements will only grow to 36,470 billets by 2021 (a 4-percent increase from current levels) compared with 38,290 billets under the PB12 plan.

28. Appendix C shows the year-by-year requirements for each enlisted surface community under the proposed PB 13 plan.

Requirements for individual communities

So far we have looked at aggregate requirements—first across all officer and enlisted communities and then across just the enlisted surface communities. Now, we look at the change in requirements for each of the enlisted surface communities. Table 9 summarizes our results for the combat systems/operations and engineering communities. In each half, the first column lists the community and the second column gives the community’s manpower requirement in 2012. The next three columns show the peak requirement for each community over the 2012–2041 period. First, it shows the year in which the maximum requirement occurs, then the size of that requirement (i.e., number of billets), and finally the percentage increase from today’s requirement. The next three columns show the same information for the minimum requirement.

Table 9. Summary of results by community

EMC	FY 2012 billets	Maximum			Minimum		
		FY	Billets	Change	FY	Billets	Change
Surface combat systems and operations communities							
BM	2,698	2025	3,095	+15%	2036	2,548	-6%
ETSW	2,866	2021	3,036	+6%	2036	2,433	-15%
FC	2,667	2021	3,069	+15%	2036	2,270	-15%
FC Aegis	1,731	2021	2,087	+21%	2034	1,464	-16%
GM	1,946	2024	2,593	+33%	2012	1,946	0%
MN	412	2018	428	+4%	2025+	264	-36%
OS	4,037	2012	4,119	+2%	2036	3,271	-19%
QM	1,188	2020	1,237	+4%	2036	972	-18%
STG	1,811	2024	2,208	+22%	2014	1,745	-4%
Engineering communities							
EMSW	2,380	2022	2,554	+7%	2041	2,073	-13%
EN	2,760	2024	3,289	+19%	2012	2,760	0%
DC	2,027	2021	2,223	+10%	2036	1,778	-12%
GSM	1,723	2021	1,751	+2%	2034	1,322	-23%
GSE	683	2021	815	+19%	2034	641	-6%
HT	1,355	2020	1,406	+4%	2041	976	-28%
IC	1,422	2020	1,471	+3%	2041	1,175	-17%
MMSW	2,953	2012	2,953	0%	2041	1,284	-57%
MR	349	2012	349	0%	2041	217	-38%

Earlier we showed that manpower requirements for all surface communities are projected to increase by about 9 percent over the next 10 years. Table 9 shows that some ratings will see a much greater increase. Three surface combat/operations communities—FC Aegis, GM, and STG—will see their requirements increase by more than 20 percent. Two others—FC and BM—will see increases of 15 percent.

Overall, increases for the engineering communities are not as large. Only two communities, EN and GSE, will see increases greater than 15 percent. In addition, several communities will see significant decreases in their long-range requirements. By 2041, ship requirements will drop by more than half for MMSW, by more than a third for MR, and by about a quarter for GSM and HT. Among the combat system/operations communities, only MN will see a decrease of this magnitude; its requirements will drop 36 percent by 2025.

Experience mix

In analyzing future manpower requirements, it's not just the total number of requirements that is of interest, it's also the experience mix or paygrade structure of these requirements. Dramatic changes in the experience mix could lead to a paygrade structure that is unsustainable under today's promotion and advancement policies.

Figure 15 shows the paygrade distribution of current and future enlisted surface community requirements. Each column within a paygrade group represents the portion of requirements in that paygrade for the indicated year. The columns span the 30-year period in 6-year increments (i.e., the portion of requirements in 2012, 2018, etc.). The results clearly show that enlisted requirements on board surface ships will become more senior. On average, the percentage of E3 and E4 requirements will decline by 3 and 2 percent, respectively; the percentage of E6 and E7 requirements will each increase by 2 percent.

Next, we look at the change in experience mix for each surface community. The top half of table 10 shows how the paygrade structure of CS/OPS communities is projected to change over the next 30 years. It shows the change in the percentage of ship billets that each paygrade represents. For example, the BM community will experience a 4.6-percent decrease in the portion of E3 billets on ships by 2041. Engineering community data are in the lower half of table 10.

Figure 15. Paygrade distribution of surface community requirements

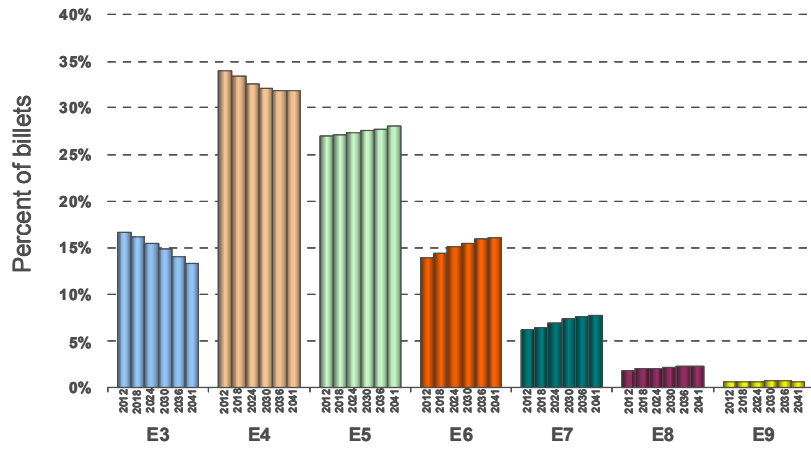


Table 10. Paygrade structures by community

EMC	E3	E4	E5	E6	E7	E8	E9
Surface CS/OPS communities							
BM	-4.6%	2.3%	-1.2%	1.4%	3.1%	-1.0%	0.0%
ETSW	-0.2%	-4.6%	2.9%	2.4%	0.0%	-0.5%	0.1%
FC	-0.3%	-7.3%	0.5%	4.1%	3.2%	-0.1%	-0.1%
FC Aegis	0.0%	1.0%	-0.4%	-0.5%	0.1%	0.0%	-0.1%
GM	2.5%	-7.0%	2.5%	0.7%	0.2%	1.2%	0.0%
MN	-27.4%	-39.8%	36.0%	12.2%	13.8%	5.2%	0.0%
OS	-4.1%	0.6%	-2.8%	2.9%	2.6%	0.7%	0.1%
QMSW	-0.8%	-2.4%	-2.3%	-4.4%	9.6%	0.2%	0.0%
STG	-1.1%	-3.8%	0.2%	4.9%	0.6%	-0.9%	0.0%
Surface engineering communities							
DC	-3.2%	-0.3%	-0.8%	1.1%	3.5%	0.0%	-0.3%
EMSW	-3.2%	1.0%	0.2%	2.0%	0.6%	-0.9%	0.3%
ENSW	-2.4%	-2.6%	-0.3%	4.2%	-1.2%	2.4%	0.0%
GSE	-3.1%	-2.2%	-1.8%	7.4%	-0.4%	0.0%	0.0%
GSM	-8.3%	-1.9%	9.0%	1.9%	-0.7%	0.0%	0.0%
HT	-5.8%	4.3%	1.9%	-1.9%	0.7%	0.3%	0.5%
ICSW	-1.1%	0.2%	0.2%	0.2%	0.6%	-0.1%	0.0%
MMSW	-4.6%	-5.3%	7.4%	1.3%	0.5%	1.0%	0.4%
MR	-1.8%	3.7%	8.4%	-8.1%	-2.0%	-1.0%	0.8%

Because the Navy grows its senior sailors from junior sailors, an increase in senior requirements relative to junior requirements can present problems. However, we feel that flexibility in the current advancement/promotion system will allow the Navy to grow a personnel inventory to meet these more senior requirements.²⁹ These changes, however, are not without consequences. Faster promotions will ultimately lead to lower experience levels (in terms of average years of service) for midgrade and senior sailors.

STG, MN, FC Aegis, and SWO communities

In this subsection we discuss four surface communities—STGs, MNs, FC Aegis, and SWOs—in more detail.

Sonar Technicians - Surface

Earlier, we identified STGs as one of the communities that will experience a significant increase in afloat manpower requirements. Figure 16 shows our projections based on the PB12 plans for the next 30 years. After a small drop over the next two years, STG requirements will increase to 2,213 billets by 2024 as the Navy adds more DDGs and LCS ASW mission modules. Relative to the 2012 requirement of 1,811 billets, this represents a 22-percent increase. After peaking in 2024, STG requirements will decrease through 2034 as the Navy retires CGs and Flight 1 and II DDG-51s. Beyond that, requirements will once again increase as the Navy adds Flight III and IV DDG-51 ships.

Figure 17 shows the paygrade distribution of current and future STG requirements. It reveals a shift to more senior requirements over time. Specifically, E4 requirements will decrease by 4 percent, whereas E6 requirements will increase by 5 percent. Figure 18 shows the reasons for this change. It presents the paygrade distribution of STG billets on the four principal surface combatants. The shift to more senior requirements is the result of LCS ships (whose ASW mission module crews have 33 percent of their STG requirements at E6 or above) replacing the CGs (for which only 19 percent of the STG billets are E6 or above).

29. One exception is the MN community, which we will address later.

Figure 19 shows the impact of the pending force structure changes on shipboard STG requirements. Retiring seven CGs over the next two years will reduce STG requirements by almost 120 billets per year from 2014 to 2023.

Figure 16. STG manpower requirements for the PB12 force structure

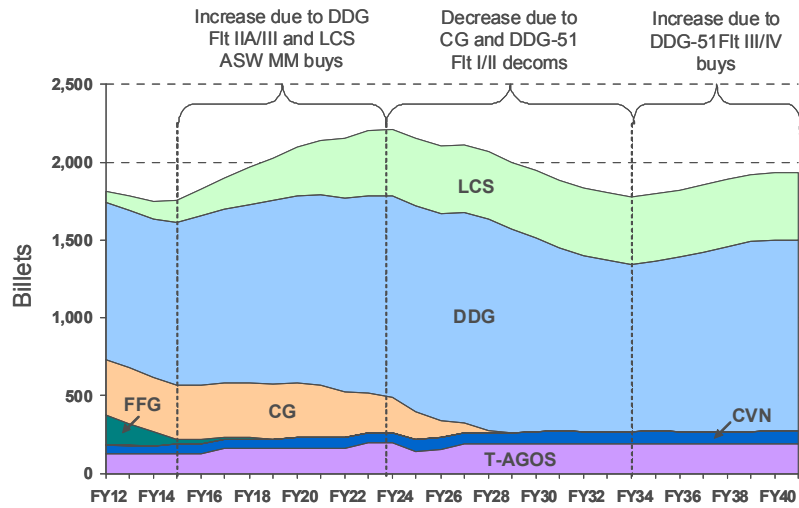


Figure 17. Paygrade distribution of STG ship billets

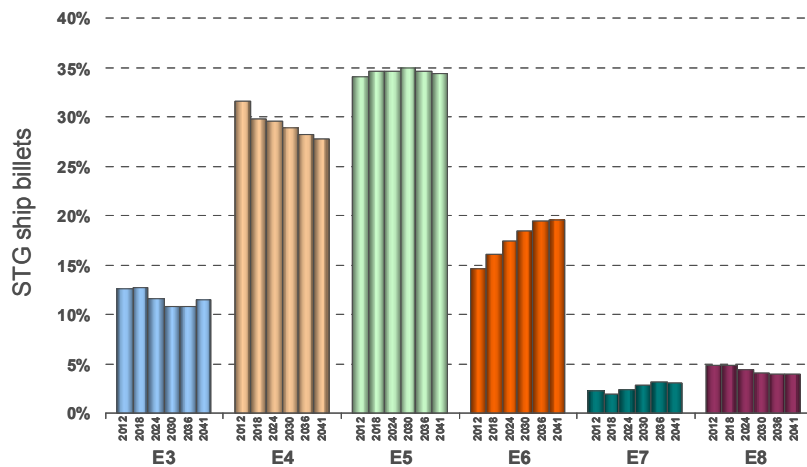


Figure 18. Paygrade distribution of STG billets by ship class

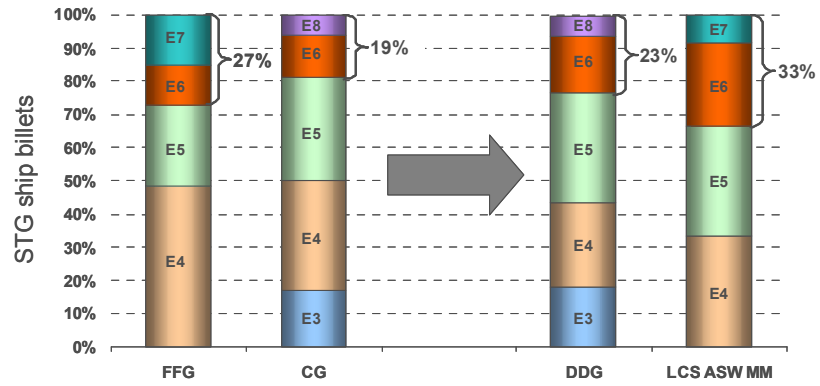
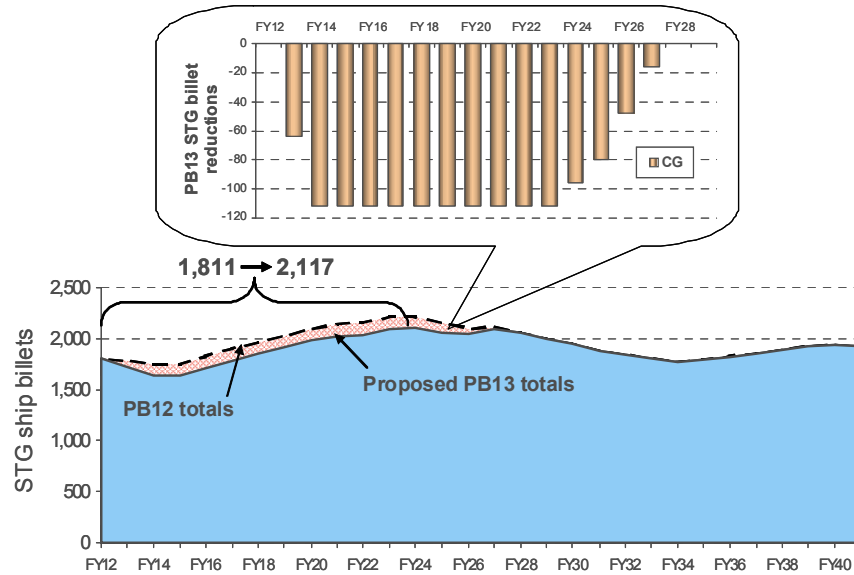


Figure 19. Impact of force structure changes on STG requirements



Mineman

Figure 20 shows 30-year projections of future shipboard MN requirements, based on the PB12 plans. Only two ship types require MNs: MCM and LCS.³⁰ All the MCMs are scheduled to leave the active fleet by 2025. The Navy plans to buy 24 MIW mission module crews by

30. MN requirements for LCS are limited to the MIW mission module crew.

2024. These crews have a combined MN requirement of 264 billets, which may be too small to warrant a separate community.

Figure 20. MN manpower requirements for the PB12 force structure

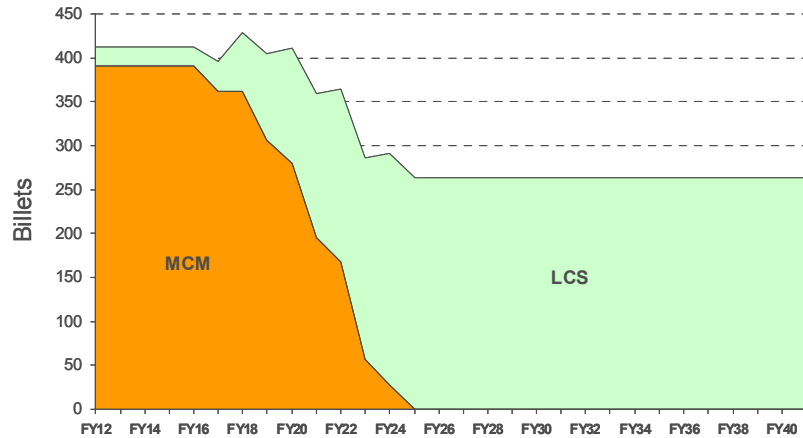
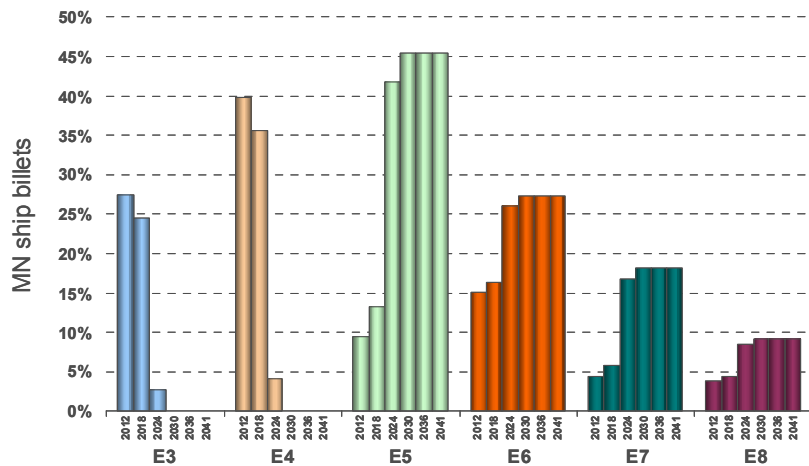


Figure 21 shows the paygrade structure for afloat MN billets. Once the MCM ships leave the inventory, the afloat E3 and E4 requirements go away, which will pose problems if the Navy intends to keep the MN community intact. The proposed PB13 force structure changes do not affect future MN requirements.

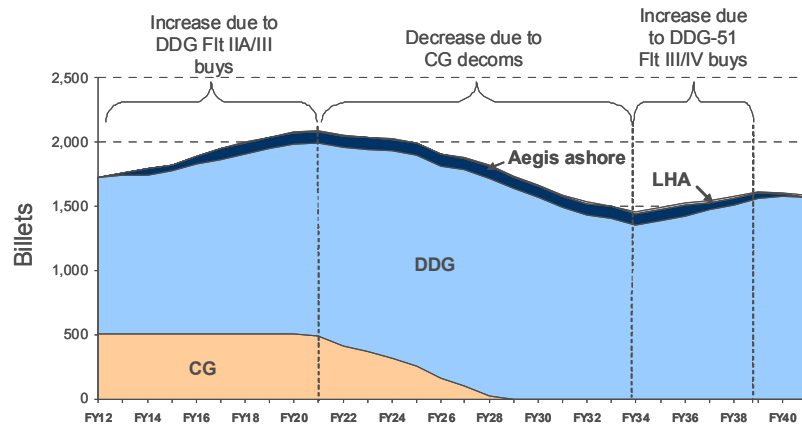
Figure 21. Paygrade distribution of MN ship billets



Fire Controlman - Aegis Weapon System

Figure 22 shows our projections of future FC Aegis manpower requirements, based on the PB12 plans, over the next 30 years. Nearly all shipboard FC Aegis requirements reside on CGs and DDGs. Our projections show that FC Aegis requirements will steadily increase over the next decade, reaching a peak of 2,087 billets in 2021. This represents a 21-percent increase from the 1,731 billet requirement in 2012. Starting in 2022, FC Aegis requirements will steadily decrease as the Navy retires its CGs, dropping to 1,454 billets by 2034. Beyond that, we see a slight increase to 1,617 billets by 2039 due to the addition of DDG-51 Flight III and IV ships.

Figure 22. FC Aegis manpower requirements for the PB12 force structure^a



a. Includes overseas billets at the two Aegis Ashore sites

Figure 23 shows the paygrade distribution of current and future FC Aegis sea-duty requirements. We see very little change in the experience mix of future requirements. Figure 24 shows the impact of proposed PB13 force structure changes on future shipboard FC Aegis requirements. Retiring seven CGs over the next two years will reduce FC Aegis requirements by almost 160 billets per year from 2014 to 2023. Under this plan, FC Aegis requirements will only grow

to 1,926 billets by 2021, which is only an 11-percent increase from the 2012 requirement.

Figure 23. Paygrade distribution of FC Aegis ship billets

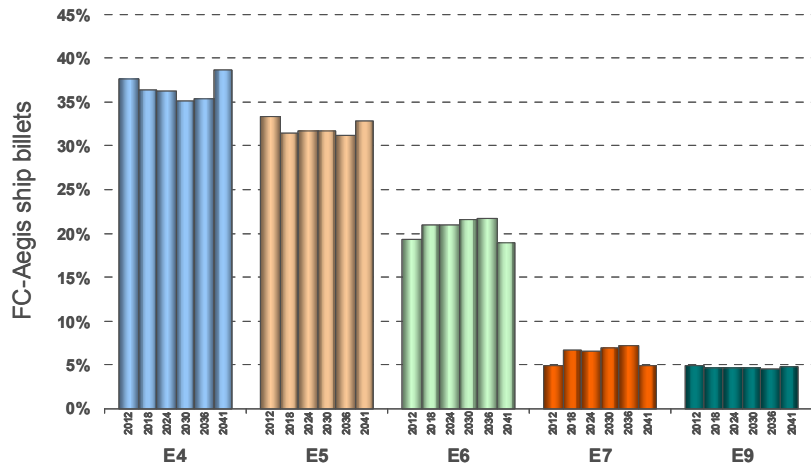
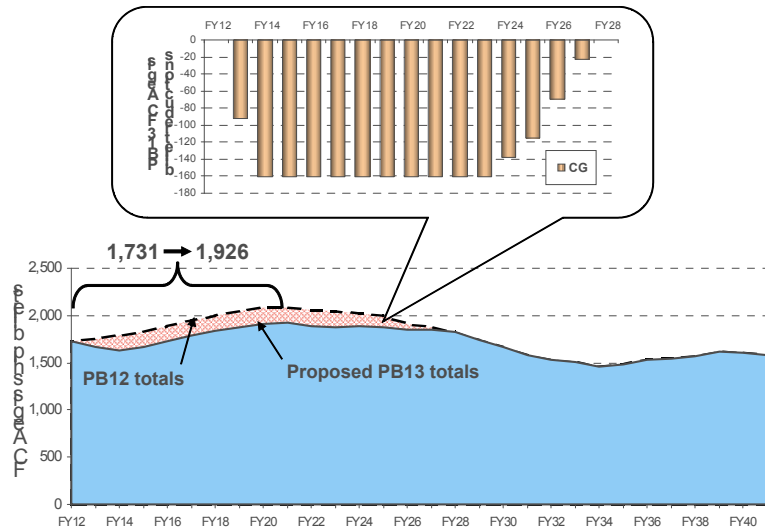


Figure 24. Impact of force structure changes on FC Aegis requirements



Surface Warfare Officers

Turning to the officer side, we examine the SWO community. Figure 25 shows our projected billet requirements for the PB12 plan (and two Aegis Ashore sites) over the next 30 years. As we saw with the enlisted communities, after a small two-year decline, SWO requirements will steadily rise, growing 2,816 billet by 2022. This represents a 13-percent increase from the 2012 requirements of 2,488 billets. Starting in 2025, SWO requirements will steadily decrease, dropping to 2,408 billets by 2034. Beyond that, we see a slight increase to 2,531billets by 2040. Figure 25 also shows that, unlike the enlisted communities, the largest share of the SWO requirements comes from surface combatants (as opposed to carriers and amphibious ships).

Figure 25. SWO shipboard and Aegis Ashore manpower requirements

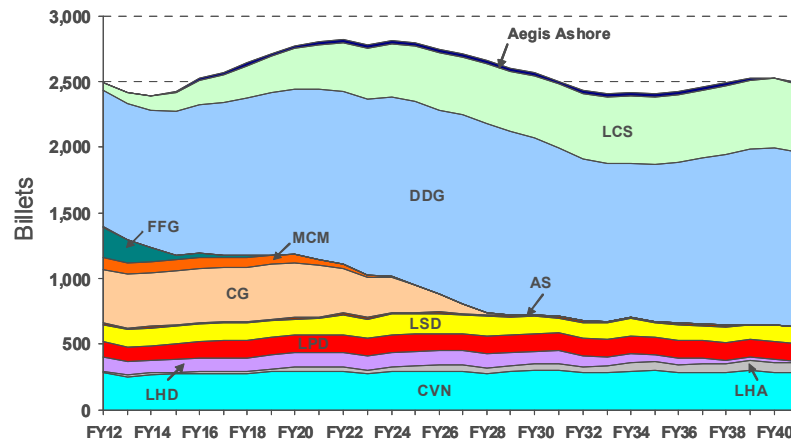


Figure 26 shows the change in the paygrade distribution of SWO requirements. Our projections show a significant decrease in O1 requirements (9 percent) and a 5-percent increase in O3 requirements. This change in paygrade structure poses a problem to the SWO community because the Navy currently has more ensigns assigned to ships than it has billets. To illustrate, figure 27 shows the ratio of inventory (i.e., onboard SWOs) to authorized SWO billets for DDG-51 ships over the past six years. In 2010 and 2011, these ships

had more than twice the ensigns on board than there were O1 billets.

Figure 26. Paygrade distribution of SWO requirements

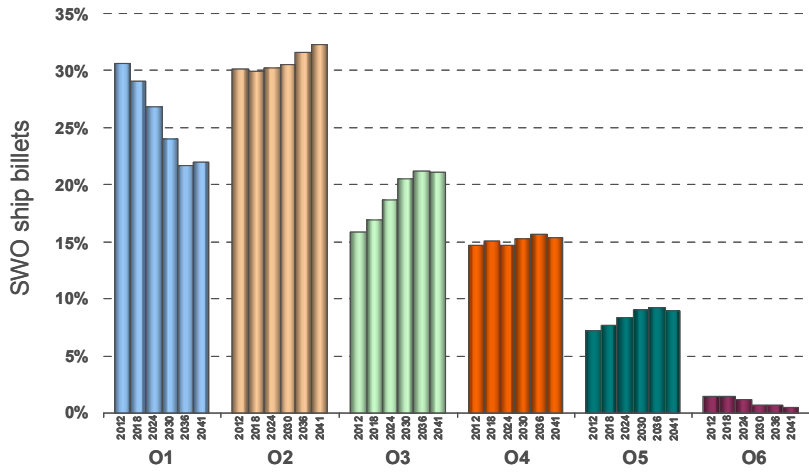
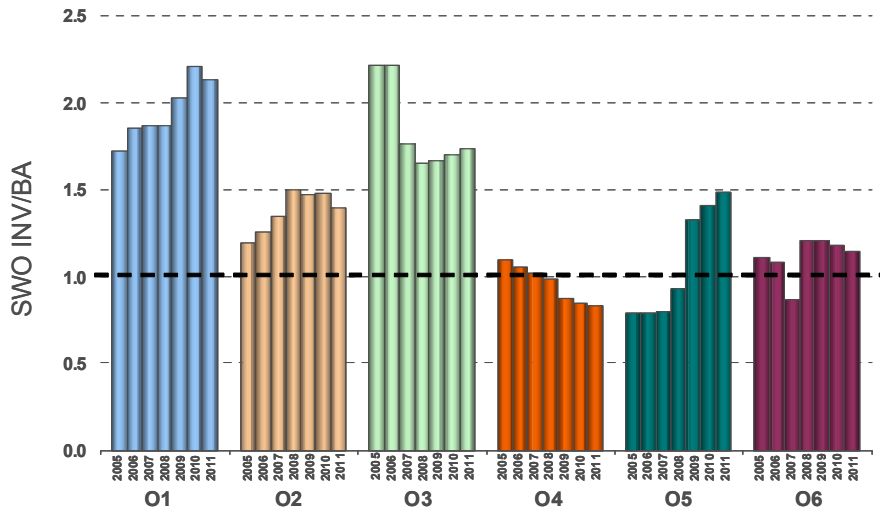


Figure 27. SWO manning levels on DDG-51 ships

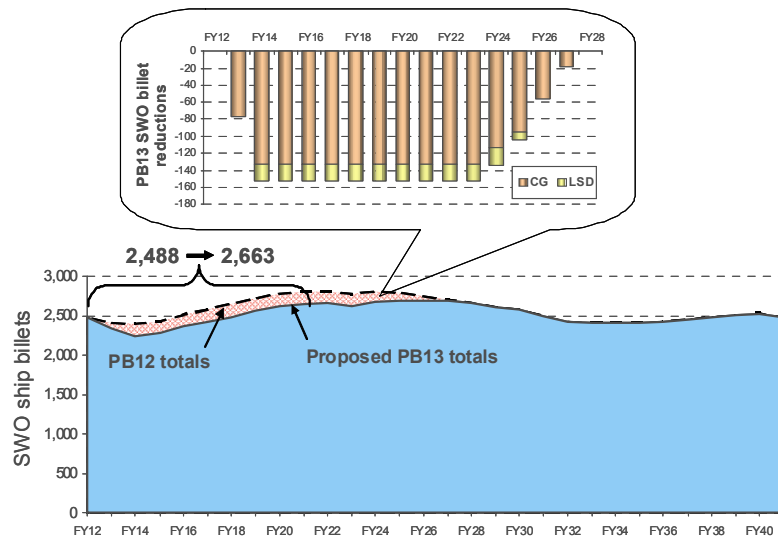


The future decrease in O1 billets will, by itself, exacerbate the over-manning of O1s on surface ships. When we add to this the increase in

O3 requirements—which are primarily department head positions—it could force the Navy to increase SWO accessions (and hence ensigns) in order to grow enough O3s to fill these department head requirements.

Figure 28 shows the impact of the proposed PB13 force structure changes on shipboard SWO requirements. In the top chart, the tan and yellow portions of each column represent billet reductions on CGs and LSDs, respectively. Moving up the retirement dates for these nine ships, in particular the seven CGs, will reduce SWO requirements by more than 150 billets per year from 2014 to 2023.

Figure 28. Impact of force structure changes on SWO requirements



Conclusions and recommendations

The purpose of this study was to forecast and analyze future manpower requirements for the surface fleet based on the most recent 30-year shipbuilding plans. Because the PB12 plan represents the Navy's current official force structure program, we focused our efforts on this future force structure. However, because the Navy is proposing changes to the PB12 force structure program, we also examined how these changes would affect future requirements

Future requirements based on the PB12 force structure plans

Surface force manpower requirements are driven by the number of military-crewed surface ships. Today, the active fleet has 170 military-crewed ships. Over the next 3 years, this number will drop to 157 as the Navy retires most of its remaining FFGs. In 2016, the fleet begins to grow as new DDG and LCS ships enter the fleet. This buildup continues through 2022, and the fleet increases to 188 military-crewed ships. From 2022 to 2027, the size of the fleet remains at this level as new DDG and LCS ships offset the retirements of the MCMs and CGs. In 2028, the fleet begins a period of downsizing; the number of ships drops to 170 by 2034. This is followed by another, albeit smaller, growth period in which the size of the fleet reaches 179 ships by 2040.

Total military requirements

In 2012, these ships have a total requirement of 83,105 billets, which drops to 80,223 in 2014 before increasing to 90,393 in 2021. Relative to today's requirements, the PB12 ship plan increases the surface fleet's manpower requirements by almost 7,300 billets over the next decade—a 9-percent increase. Most of this increase results from the acquisition of 13 DDG-51 ships, 32 LCS ships, and 1 aircraft carrier.

Taking a more long-range look, the total requirement for all military-crewed ships stays above 87,000 (with some fluctuation caused by

changes in the number of carriers) through 2027. The requirements begin to decline in 2028 and continues to do so through 2033, after which they level off and stay at about 75,000 out to 2041. In addition, the stand-up of the two Aegis Ashore sites in Eastern Europe, for which the Navy will provide all military manpower, will add a manpower requirement comparable to a single DDG-51 ship.

Enlisted surface communities

Restricting our look to just the enlisted surface communities, their future surface fleet manpower requirements will follow the same trend as the total military requirements. That is, over the next decade, these requirements (in aggregate) will increase by almost 9 percent (roughly 3,200 billets).³¹

In addition, our estimates show that this increase is not distributed evenly across all the surface communities. Some will see significantly larger increases over the next decade; others will see smaller increases or, in some cases, decreases in their requirements. On average, the combat systems/operations communities will experience larger increases than the engineering communities. Three surface CS/OPS communities—Fire Controlman - Aegis Weapon System, Gunner's Mate, and Sonar Technicians - Surface—will see their requirements increase by more than 20 percent. Retiring the mine countermeasure ships, however, will cause afloat Mineman requirements to drop by 38 percent.

Our estimates also show that future manpower requirements for enlisted surface communities will become more senior. Overall, we forecast a small drop (2 to 3 percent) in the portion of both E3 and E4 requirements and a corresponding increase in the portion of both E6 and E7 requirements. Similar to total requirements, some communities (e.g., Quartermasters) will see larger shifts than others. This shift to more senior requirements will further increase manpower costs, adding yet another hurdle to buying the additional endstrength needed to meet the increase in future requirements.

31. The surface communities account for about 45 percent of the total surface fleet enlisted requirement.

Surface Warfare Officers

Moving to officers, our estimates show that requirements for the SWO community will increase by 13 percent over the next decade. More noteworthy, however, is that the portion of O1 shipboard requirements will decrease by 9 percent while the portion of O3 requirements increases. The SWO community currently has more junior SWOs in its inventory than it has requirements. As a result, surface ships are typically overmanned with junior SWOs. Under the existing SWO career path model, more O3 requirements and fewer O1 requirements will exacerbate this overmanning.

Impact of proposed PB13 force structure program changes

Because of pending DOD budget cuts, the Navy continues to reassess its future surface force structure program. Recently, in its PB13 budget submission, the Navy proposed changes to the PB12 force structure program. For the surface fleet, these changes consist of accelerating the retirements of seven CGs and two LSDs. The proposed plan calls for retiring four CGs in 2013, three CGs in 2014, and two LSDs in 2014.

Compared with the PB12 plan, these early retirements will reduce surface fleet manpower requirements during the 2013–2027 time period. The largest reductions occur from 2014 to 2023, when annual requirements will drop by almost 3,000 billets. These reductions will cause a larger drop in total surface fleet manpower requirements over the next two years—5,854 billets compared with 2,882 billets under the PB12 plan. Reductions will also cause a smaller increase in requirements over the next decade. Total manpower requirements will only grow to 87,694 billets by 2021 (a 5-percent increase from current levels) compared with 90,393 billets under the PB12 plan.

Restricting our look to just the enlisted surface communities, these early retirements will reduce annual manpower requirements from 2014 to 2023 by over 1,800 billets. These reductions will cause a larger drop in surface community requirements over the next two years—2,676 billets compared with 858 billets under the PB12 plan. They also will reduce the growth in billets over the next decade. Total

manpower requirements will only grow to 36,470 billets by 2021 (a 4-percent increase from current levels) compared with 38,290 billets under the PB12 plan.

For the SWO community, accelerating the retirements of these nine ships, particularly the seven CGs, will reduce manpower requirements from 2014 to 2023 by more than 150 billets per year.

Ship versus non-ship requirements

Although most of the surface force manpower requirements come from the Navy’s fleet of surface ships, there are other operational non-ship units and commands that have significant “sea-duty” manpower requirements. They include afloat staffs, Naval Beach Group units, Patrol Coastal ships, and overseas Aegis Ashore sites.

Table 11 shows the breakout of sea-duty manpower requirements (officer and enlisted across all communities) for ship and non-ship units in 2012 and their projected requirements for 2018. Ship requirements are listed separately for military- and civilian-crewed ships. The largest source of manpower requirements are the military-crewed ships, accounting for almost 94 percent of all surface force requirements. The next two largest sources are NBG units and afloat staffs. The requirements for each of the other categories—PC ships and Aegis shore sites—are comparable in numbers to a single surface combatant.

Table 11. Sources of surface force military manpower requirements^a

Category		2012		2018	
		Billets	Percentage	Billets	Percentage
Surface ships	Military-crewed ships	80,105	93.9	85,232	93.8
	Civilian-crewed ships	478	0.6	273	0.3
	Aegis Ashore sites	1	0.0	330	0.4
Non-ship units	Afloat staffs	2,004	2.3	2,146	2.4
	NBG units	2,415	2.8	2,415	2.7
	PC ships	450	0.5	468	0.5
Total		85,453		90,864	

a. Billets include all active-duty officer and enlisted manpower requirements.

Two recommendations

Investigate potential problems

Our forecasts of future surface force manpower requirements reveal four issues that could pose significant problems and that we believe warrant future investigation:

- Under the PB12 plan, surface force manpower requirements will increase by 9 percent over the next decade. Even with the proposed PB13 force structure changes, requirements will still increase by 5 percent. The Navy will face a difficult challenge to find the additional endstrength to man these requirements.
- Future enlisted manpower requirements on ships will become more senior. Although flexibility in the current advancement/promotion system should allow the Navy to grow a personnel inventory to meet these more senior requirements, faster promotions will ultimately lead to lower experience levels in both leadership skills and technical proficiency for midgrade and senior sailors.
- Future SWO requirements on ships show a significant decrease in the percentage of O1 (i.e., ensign) requirements and a corresponding increase in the percentage of O3 (i.e., lieutenant) requirements. Because the SWO community accesses officers to meet department head requirements (at the O3–O4 level), these changes will likely exacerbate the current overmanning of ensigns on surface combatants.
- Retiring the MCM ships will reduce afloat requirements for the MN community by over a third and will eliminate all junior (i.e., E3 and E4) at-sea billets. These changes call into question the feasibility of maintaining a separate MN community in the future.

Continue to project fleetwide manpower requirements

In determining the size and shape of the future surface fleet, Navy planners consider many factors, such as warfighting capability and requirements, sustaining the U.S. industrial base, and ship

construction and service-life extension costs. And while manpower costs are a concern, it is unclear how much long-range forecasts of future manpower requirements across the entire fleet factor into these decisions. We submit that projecting and analyzing future manpower requirements for the entire fleet should play an important role in the decision process. If manpower costs continue to rise and active-duty endstrength continues to decline, we believe that this type of analysis becomes even more critical to this planning process.

Appendix A: PB12 ship inventory

Table 12 shows the inventory of military-crewed ships based on the PB12 shipbuilding and ship retirement plans. The table includes two time periods: The upper part presents the 2012–2026 inventory, and the lower part contains the 2027–2041 inventory.

Table 12. PB12 military-crewed ship inventory for 2012 through 2026 and 2027 through 2041

Class	Time period														
	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26
CVN	11	10	10	11	11	11	11	11	12	12	12	11	11	12	12
LHA	1	1	1	1	1	2	2	2	2	3	3	3	3	3	4
LHD	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
LPD	9	9	9	9	10	11	11	11	11	11	11	11	11	11	11
LSD	12	12	12	12	12	12	12	12	12	12	12	14	14	14	13
AS	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
LCC	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
CG	22	22	22	22	22	22	22	22	22	21	18	16	14	11	7
MCM	14	14	14	14	14	13	13	11	10	7	6	2	1	0	0
FFG	23	17	10	3	3	1	1	0	0	0	0	0	0	0	0
DDG-51	62	62	62	62	65	66	68	70	72	73	75	76	78	79	80
DDG-1000	0	0	1	2	3	3	3	3	3	3	3	3	3	3	3
LCS	4	4	6	9	14	18	22	25	30	33	36	38	40	42	44
Total	170	163	159	157	167	171	177	179	186	187	188	186	187	187	186
	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	FY38	FY39	FY40	FY41
CVN	12	11	11	12	12	11	11	11	12	11	11	11	11	11	11
LHA	4	4	4	4	5	5	5	6	6	6	6	7	7	7	7
LHD	8	8	7	7	7	6	5	5	4	4	3	2	2	2	1
LPD	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
LSD	13	13	13	11	11	10	11	11	10	9	10	9	10	10	11
AS	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
LCC	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0
CG	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0
MCM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FFG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DDG-51	81	82	79	75	71	69	67	65	66	68	70	72	74	74	75
DDG-1000	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
LCS	46	47	49	50	52	53	54	54	55	55	55	57	58	58	56
Total	186	184	181	177	176	172	171	170	171	171	173	176	178	178	177

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Appendix B: Surface force “non-ship” operational units

Although our primary focus is on the manpower required to operate the fleet of surface ships, we also examined the manpower requirements for operational non-ship units of the surface force. These units include afloat staffs, Naval Beach Group (NBG) units, Patrol Coastal (PC) ships, and overseas Aegis Ashore sites. All these units have manpower requirements that are considered sea-duty assignments for rotational purposes.

For afloat staffs, NBG units, and PC ships, we examined current and near-term manpower requirements based on programmed authorized positions across the FYDP in TFMMS. Table 13 lists the activities, by UIC, that we included in the NBG unit category. It also shows the activities’ FY 2012 manpower requirements for enlisted personnel, officers, and warrant officers—all defined in terms of authorized billets. Tables 14 and 15 show similar data for the afloat staffs and PC ships, respectively. Note that we included the PC maintenance support teams (PCMST) that have sea-duty manpower requirements.

For Aegis Ashore sites, we examined the long-range manpower requirements to operate two overseas sites based on projections in the most recent Aegis Ashore MER [6]. Table 16 shows these manpower requirements by enlisted and officer community.

Table 13. Naval Beach Group units manpower requirements
(FY 2012 billets)

UIC	Name	Enlisted	Officer	WO	Total
35431	COMNBEACHGR 1 PT	23	9	1	33
35624	PHIB CB 1 SEADUC	449	14	1	464
42043	PHIB CB2 SEADUCO	342	18	1	361
44920	BCHMSTR UN 1 D A	19			19
44921	BCHMSTR UN 1 D B	19			19
44923	BCHMSTR UN 1 D D	19			19
44924	BCHMSTR UN 1 D E	19			19
44925	BCHMSTR UN 1 D F	19			19
45411	ACU 5	310	10		320
45472	ACU 4	366	11		377
49388	BCHMSTR UN 1 DWP	29		1	30
53210	ACU 2	211	7	1	219
53211	BCHMSTR UN 2	114	2	4	120
53212	BCHMSTR UN 1	8	7	1	16
55597	ACU 1 SEA	122	2		124
55598	ACU 1 MPF	60	1	1	62
55621	ACU 5	75	3		78
55622	ACU 1 WP	47			47
57057	CNBCHGR 2 SEADU		4		4
Total		2,251	88	11	2,350

Table 14. Afloat staffs manpower requirements (FY 2012 billets)

UIC	Name	Enlisted	Officer	WO	Total
57098	CCSG 1	51	21		72
09576	CCSG 2	51	23		74
09722	CCSG 3	51	22		73
09723	CCSG 5	54	32		86
09724	CCSG 7	0	0		0
53889	CCSG 8	51	23		74
55780	CCSG 9	51	24		75
55771	CCSG 10	51	23		74
55775	CCSG 11	50	24		74
0107A	CCSG 12	51	23		74
0172A	COMDESRON 1	14	11		25
39789	COMDESRON 2	13	12		25
0116A	COMDESRON 7	11	11		22
0118A	COMDESRON 9	11	11		22
40514	CDS 14 OMC SEADU	3	8		11

Table 14. Afloat staffs manpower requirements (FY 2012 billets) (cont.)

UIC	Name	Enlisted	Officer	WO	Total
0124A	COMDESRON 15	36	19		55
0130A	COMDESRON 21	11	11		22
0131A	COMDESRON 22	13	12		25
0132A	COMDESRON 23	11	11		22
0133A	COMDESRON 24	0	0		0
0135A	COMDESRON 26	13	12		25
39791	COMDESRON 28	13	11		24
55528	COMDESRON 31	8	10		18
52811	COMDESRON 40	10	11		21
45193	COMDESRON 50	13	12		
3479B	COMDESRON 60	8	6		
55297	COMP HIBRON 1	23	12		35
55335	COMP HIBRON 2	0	0		0
55281	COMP HIBRON 3	22	12		34
55336	COMP HIBRON 4	22	13		35
55269	COMP HIBRON 5	23	13		36
55337	COMP HIBRON 6	23	13		36
55338	COMP HIBRON 8	21	13		34
55468	COMP HIBRON 11	23	12		35
45701	COMPSRON 1 NWCF	5	5	1	11
45702	COMPSRON 2	4	6		10
46404	COMPSRON THREE	5	6		11
55333	COMEXSTRKGRU 2	28	26		54
52739	COMEXSTRKGRU 3	26	24		50
55308	COMEXSTRKGRU 7	44	20	1	65
40549	LCS CLSRON SDTY	28			28
60500	MCM MAINT DET	6	1		7
41979	MCMDIV 31	10	7		17
55645	MCMRON 5	9	11		20
55540	MCMRON 7	9	11		20
82517	MSCO DGAR	4	2		6
40448	MSFSC SSU BAHRAI	2			2
41083	SEALOGLANTOPSUPE	25	2		27
68953	COMSEALOGCENT	1	1		2
55134	TACRON 11	89	21		110
55135	TACRON 12	84	18		102
55623	TACRON 12 DWPACA	2	2		4
09807	TACRON 21	69	22		91
09812	TACRON 22	69	21		90
Total		1,325	677	2	1,965

Table 15. Patrol Coastal manpower requirements (FY 2012 billets)

UIC	Name	Enlisted	Officer	WO	Total
40261	PC CREW ALPHA	24	3	1	28
40262	PC CREW BRAVO	24	3	1	28
40263	PC CREW CHARLIE	24	3	1	28
40264	PC CREW DELTA	24	3	1	28
40265	PC CREW ECHO	24	3	1	28
40266	PC CREW FOXTROT	24	3	1	28
40267	PC CREW GOLF	24	3	1	28
40268	PC CREW HOTEL	24	3	1	28
40269	PC CREW INDIA	24	3	1	28
40416	PC CREW JULIET	24	3	1	28
40417	PC CREW KILO	24	3	1	28
40418	PC CREW LIMA	24	3	1	28
40419	PC CREW MIKE	24	3	1	28
49080	PCMST 1	13		1	14
49081	PCMST 2	23		1	24
49083	PCMST 4	23		1	24
49714	PCMST 6	23		1	24
Total		394	39	17	450

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Appendix C: Future enlisted surface community manpower requirements

Table 17 shows future year-by-year manpower requirements for each enlisted surface community based on the PB12 force structure plan. They represent manpower requirements on all surface ships and at the two overseas Aegis Ashore sites. The table includes two time periods: the upper part presents the 2012–2026 requirements, and the lower part contains the 2027–2041 requirements. Table 18 shows the manpower requirements under the proposed PB13 plan.

Table 17. Future manpower requirements for the enlisted surface communities under the PB12 plans

EMC	Time period															
	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	
BM	2,698	2,723	2,633	2,653	2,752	2,789	2,838	2,888	2,991	3,024	3,025	3,038	3,054	3,095	3,033	
DC	2,027	2,068	2,045	2,024	2,086	2,110	2,138	2,185	2,215	2,223	2,219	2,177	2,211	2,199	2,161	
EMSW	2,380	2,324	2,316	2,323	2,391	2,421	2,441	2,490	2,545	2,553	2,554	2,472	2,519	2,549	2,534	
ENSW	2,760	2,806	2,787	2,790	2,925	2,998	3,052	3,099	3,170	3,193	3,212	3,254	3,289	3,282	3,217	
ETSW	2,865	2,776	2,702	2,733	2,813	2,858	2,895	2,930	3,014	3,036	3,015	2,944	2,948	2,976	2,930	
FC	2,667	2,762	2,725	2,741	2,827	2,872	2,917	2,959	3,037	3,069	3,034	2,994	2,980	2,973	2,894	
FCAEGIS	1,731	1,741	1,763	1,826	1,875	1,924	1,998	2,042	2,078	2,087	2,054	2,042	2,028	1,993	1,914	
GM	1,946	1,981	2,008	2,073	2,174	2,249	2,334	2,417	2,504	2,566	2,588	2,588	2,593	2,590	2,543	
GS	92	95	97	103	108	112	115	118	122	124	123	124	121	123	120	
GSE	683	746	723	715	744	751	769	784	806	815	807	807	806	808	789	
GSM	1,723	1,678	1,601	1,553	1,610	1,623	1,661	1,689	1,732	1,751	1,734	1,730	1,728	1,717	1,670	
HT	1,355	1,328	1,325	1,311	1,345	1,351	1,359	1,394	1,406	1,404	1,398	1,368	1,397	1,393	1,373	
ICSW	1,422	1,354	1,344	1,365	1,390	1,394	1,402	1,424	1,471	1,468	1,462	1,404	1,422	1,454	1,432	
MMSW	2,953	2,719	2,826	2,688	2,688	2,688	2,688	2,879	2,743	2,743	2,743	2,577	2,768	2,632	2,632	
MN	412	412	412	412	412	395	428	405	411	360	365	287	292	264	264	
MR	349	337	328	325	330	333	335	338	345	348	347	339	341	344	343	
OS	4,037	3,869	3,713	3,728	3,841	3,892	3,962	4,015	4,113	4,155	4,119	4,059	4,058	4,060	3,980	
QMSW	1,188	1,186	1,148	1,154	1,185	1,188	1,204	1,213	1,237	1,232	1,216	1,202	1,199	1,204	1,166	
STG	1,811	1,785	1,745	1,748	1,825	1,899	1,967	2,026	2,096	2,139	2,152	2,208	2,213	2,147	2,103	
Total	35,099	34,690	34,241	34,265	35,321	35,847	36,503	37,295	38,036	38,290	38,167	37,614	37,967	37,803	37,098	
	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	FY38	FY39	FY40	FY41	
BM	3,008	2,953	2,869	2,806	2,759	2,619	2,596	2,589	2,580	2,548	2,578	2,549	2,595	2,615	2,596	
DC	2,138	2,072	2,033	1,980	1,944	1,839	1,817	1,832	1,803	1,778	1,802	1,798	1,846	1,804	1,796	
EMSW	2,523	2,427	2,407	2,331	2,312	2,165	2,152	2,199	2,181	2,112	2,122	2,111	2,164	2,104	2,073	
ENSW	3,184	3,150	3,112	2,993	2,964	2,863	2,915	2,946	2,881	2,833	2,922	2,905	2,989	2,988	3,018	
ETSW	2,900	2,808	2,730	2,666	2,617	2,485	2,457	2,454	2,474	2,433	2,453	2,461	2,438	2,418	2,384	
FC	2,844	2,741	2,631	2,585	2,512	2,375	2,327	2,294	2,291	2,270	2,288	2,288	2,312	2,285	2,244	
FCAEGIS	1,879	1,821	1,736	1,665	1,585	1,533	1,504	1,454	1,488	1,528	1,572	1,588	1,617	1,633	1,601	
GM	2,520	2,467	2,407	2,321	2,265	2,201	2,178	2,156	2,182	2,194	2,230	2,253	2,286	2,286	2,272	

Table 17. Future manpower requirements for the enlisted surface communities under the PB12 plans (cont.)

EMC	Time period														
	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26
GS	119	117	113	113	109	107	108	106	108	110	114	116	118	119	117
GSE	781	766	737	719	686	665	661	641	652	666	689	704	718	720	712
GSM	1,642	1,589	1,515	1,469	1,408	1,369	1,355	1,322	1,346	1,380	1,427	1,468	1,502	1,509	1,504
HT	1,366	1,318	1,316	1,114	1,097	1,025	1,025	1,047	1,022	987	1,002	986	1,023	980	976
ICSW	1,421	1,350	1,337	1,323	1,301	1,214	1,208	1,218	1,238	1,190	1,201	1,195	1,210	1,186	1,175
MMSW	2,632	2,455	2,552	2,334	2,334	2,060	1,966	2,157	1,926	1,772	1,678	1,584	1,704	1,378	1,284
MN	264	264	264	264	264	264	264	264	264	264	264	264	264	264	264
MR	341	328	319	259	256	238	233	236	235	228	227	226	228	221	217
OS	3,928	3,790	3,673	3,615	3,556	3,377	3,330	3,319	3,333	3,307	3,341	3,346	3,377	3,345	3,311
QMSW	1,152	1,115	1,084	1,065	1,041	988	988	979	980	972	991	982	1,002	1,000	989
STG	2,110	2,067	1,999	1,946	1,879	1,833	1,808	1,769	1,801	1,823	1,855	1,887	1,919	1,932	1,927
Total	36,752	35,598	34,834	33,568	32,889	31,220	30,892	30,982	30,785	30,395	30,756	30,711	31,312	30,787	30,460

Table 18. Future manpower requirements for the enlisted surface communities under the proposed PB13 plans

EMC	Time period														
	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26
BM	2,698	2,667	2,477	2,497	2,596	2,633	2,682	2,732	2,835	2,864	2,862	2,875	2,909	2,996	2,990
DC	2,027	2,027	1,951	1,930	1,992	2,016	2,044	2,091	2,121	2,129	2,123	2,075	2,116	2,126	2,125
EMSW	2,380	2,297	2,249	2,256	2,324	2,354	2,374	2,423	2,478	2,488	2,489	2,404	2,456	2,503	2,514
ENSW	2,760	2,753	2,578	2,581	2,716	2,789	2,843	2,890	2,961	2,985	3,003	3,044	3,090	3,156	3,176
ETSW	2,865	2,710	2,564	2,595	2,675	2,720	2,757	2,792	2,876	2,897	2,877	2,807	2,828	2,883	2,882
FC	2,667	2,665	2,538	2,554	2,640	2,685	2,730	2,772	2,850	2,882	2,848	2,808	2,818	2,844	2,824
FCAEGIS	1,731	1,649	1,602	1,665	1,714	1,763	1,837	1,881	1,917	1,926	1,893	1,881	1,890	1,878	1,845
GM	1,946	1,917	1,887	1,952	2,053	2,128	2,213	2,296	2,383	2,444	2,466	2,467	2,489	2,506	2,494
GS	92	91	89	95	100	104	107	110	114	115	114	115	115	118	117
GSE	683	718	674	666	695	702	720	735	757	766	759	761	768	778	769
GSM	1,723	1,615	1,491	1,443	1,500	1,513	1,551	1,579	1,622	1,641	1,621	1,614	1,628	1,635	1,617
HT	1,355	1,312	1,280	1,266	1,300	1,306	1,314	1,349	1,361	1,359	1,352	1,322	1,355	1,366	1,361

Table 18. Future manpower requirements for the enlisted surface communities under the proposed PB13 plans (cont.)

EMC	Time period																			
	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26					
ICSW	1,422	1,334	1,298	1,319	1,344	1,348	1,356	1,378	1,425	1,422	1,416	1,358	1,381	1,423	1,417					
MMSW	2,953	2,719	2,826	2,688	2,688	2,688	2,688	2,879	2,743	2,743	2,743	2,577	2,768	2,632	2,632					
MN	412	412	412	412	412	395	428	405	411	360	365	287	292	264	264					
MR	349	333	320	317	322	325	327	330	337	340	339	331	334	339	340					
OS	4,037	3,757	3,482	3,497	3,610	3,661	3,731	3,784	3,882	3,924	3,888	3,828	3,855	3,902	3,896					
QMSW	1,188	1,153	1,072	1,078	1,109	1,112	1,128	1,137	1,161	1,158	1,142	1,128	1,132	1,153	1,142					
STG	1,811	1,721	1,633	1,636	1,713	1,787	1,855	1,914	1,984	2,027	2,040	2,096	2,117	2,067	2,055					
Total	35,099	33,850	32,423	32,447	33,503	34,029	34,685	35,477	36,218	36,470	36,340	35,778	36,341	36,569	36,460					
BM	2,994	2,953	2,869	2,806	2,759	2,619	2,596	2,589	2,580	2,548	2,578	2,549	2,595	2,615	2,596					
DC	2,126	2,072	2,033	1,980	1,944	1,839	1,817	1,832	1,803	1,778	1,802	1,798	1,846	1,804	1,796					
EMSW	2,515	2,427	2,407	2,331	2,312	2,165	2,152	2,199	2,181	2,112	2,122	2,111	2,164	2,104	2,073					
ENSW	3,169	3,150	3,112	2,993	2,964	2,863	2,915	2,946	2,881	2,833	2,922	2,905	2,989	2,988	3,018					
ETSW	2,884	2,808	2,730	2,666	2,617	2,485	2,457	2,454	2,474	2,433	2,453	2,461	2,438	2,418	2,384					
FC	2,821	2,741	2,631	2,585	2,512	2,375	2,327	2,294	2,291	2,270	2,288	2,288	2,312	2,285	2,244					
FCAEGIS	1,856	1,821	1,736	1,665	1,585	1,533	1,504	1,454	1,488	1,528	1,572	1,588	1,617	1,633	1,601					
GM	2,504	2,467	2,407	2,321	2,265	2,201	2,178	2,156	2,182	2,194	2,230	2,253	2,286	2,286	2,272					
GS	118	117	113	113	109	107	108	106	108	110	114	116	118	119	117					
GSE	774	766	737	719	686	665	661	641	652	666	689	704	718	720	712					
GSM	1,617	1,589	1,515	1,469	1,408	1,369	1,355	1,322	1,346	1,380	1,427	1,468	1,502	1,509	1,504					
HT	1,362	1,318	1,316	1,114	1,097	1,025	1,025	1,047	1,022	987	1,002	986	1,023	980	976					
ICSW	1,416	1,350	1,337	1,323	1,301	1,214	1,208	1,218	1,238	1,190	1,201	1,195	1,210	1,186	1,175					
MMSW	2,632	2,455	2,552	2,334	2,334	2,060	1,966	2,157	1,926	1,772	1,678	1,584	1,704	1,378	1,284					
MN	264	264	264	264	264	264	264	264	264	264	264	264	264	264	264					
MR	340	328	319	259	256	238	233	236	235	228	227	226	228	221	217					
OS	3,900	3,790	3,673	3,615	3,556	3,377	3,330	3,319	3,333	3,307	3,341	3,346	3,377	3,345	3,311					
QMSW	1,144	1,115	1,084	1,065	1,041	988	988	979	980	972	991	982	1,002	1,000	989					
STG	2,094	2,067	1,999	1,946	1,879	1,833	1,808	1,769	1,801	1,823	1,855	1,887	1,919	1,932	1,927					
Total	36,530	35,598	34,834	33,568	32,889	31,220	30,892	30,982	30,785	30,395	30,756	30,711	31,312	30,787	30,460					

Glossary

ARG	Amphibious ready group
AS	Submarine tender
ASW	Antisubmarine warfare
BM	Boatswain's mate
CCSG	Commander, carrier strike group
CFY	Current fiscal year
CG	Guided missile cruiser
COMDESRON	Commander, destroyer squadron
COMPHIBRON	Commander, amphibious squadron
CS/OPS	Combat systems/operations
CVN	Nuclear aircraft carrier
DC	Damage controlman
DDG	Guided missile destroyer
EMC	Enlisted master code
ETSW	Electronics technician, surface warfare
FC Aegis	Fire controlman - Aegis weapons system
FFG	Guided missile frigate
FTS	Full-time support
FYDP	Future Year Defense Plan
GM	Gunner's mate
GSE	Gas turbine systems technician, electrical
GSM	Gas turbine systems technician, mechanical
HSV	High Speed Vessel
HT	Hull maintenance technician

IC	Interior communications electrician, surface warfare
IT	Information systems technician
JHSV	Joint High Speed Vehicle
LCC	Amphibious command ship
LCS	Littoral command ship
LCS CLSRON	LCS class squadron
LHA	Amphibious assault ship
LHD	Amphibious assault ship (multipurpose)
LPD	Amphibious transport dock
LSD	Landing ship, dock
MA	Master at Arms
MAGTF	Marine Air-Ground Task Force
MCM	Mine countermeasure
MCMRON	Mine countermeasures squadron
MEF	Marine Expeditionary Force
MER	Manpower Estimate Report
MILDEPT	Military department
MIW	Mine warfare
MLP	Mobile landing platform
MMSW	Machinist's mate, surface warfare
MN	Mineman
MR	Machinery repairman
MSC	Military Sealift Command
M/SC	Maintenance support crew
MSFSC	Military Sealift Fleet Support Command
NAVMAC	Navy Manpower Analysis Center
OS	Operations specialist
PB	President's Budget
PC	Patrol coastal
PCRON	PC Class Squadron
PCD	Precommissioned detachment

PCU	Precommissioned unit
PPBES	Planning, Programming, Budgeting and Execution System
PSMD	Preliminary Ship Manning Document
QM	Quartermaster
ROC/POE	Required Operational Capabilities/Projected Operational Environment
SELRES	Selected Reserve
STG	Sonar technician, surface
SURFOR	Surface Forces
SUW	Surface warfare
SWO	Surface warfare officer
TACRON	Tactical Air Squadron
T-AE	Ammunition ship
T-AGOS	Ocean surveillance ship
T-AH	Hospital ship
T-AKE	Dry cargo/ammunition ship
T-AO	Fleet replenishment oiler
T-AOE	Fast combat support ship
T-ARS	Rescue/salvage ship
T-ATF	Fleet ocean tug
TFMMS	Total Force Manpower Management Systems
UIC	Unit Identification Code

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List of figures

Figure 1. Inventory of military-crewed ships in PB12 plan.	16
Figure 2. LCS shipframe crew schedule	18
Figure 3. LCS mission module crew schedule	18
Figure 4. Inventory for civilian-crewed ships for the PB12 plan	19
Figure 5. Effects of proposed PB13 changes on yearly CG inventory.	20
Figure 6. Effects of proposed PB13 changes on yearly LSD inventory.	20
Figure 7. Enlisted manpower requirements for Aegis Ashore sites.	29
Figure 8. Manpower requirements for military-crewed ship under the PB12 plan	32
Figure 9. Military manpower requirements for civilian-crewed ships	33
Figure 10. Manpower requirements on military-crewed ships under the proposed PB13 force structure plan	34
Figure 11. Manpower reductions due to pending force structure program changes	34
Figure 12. Surface fleet manpower requirements for enlisted surface communities under the PB12 plan	37

Figure 13. Surface fleet manpower requirements for enlisted surface communities under the proposed PB13 plan	37
Figure 14. Impact of proposed PB13 changes on enlisted shipboard manpower requirements	38
Figure 15. Paygrade distribution of surface community requirements	41
Figure 16. STG manpower requirements for the PB12 force structure	43
Figure 17. Paygrade distribution of STG ship billets	43
Figure 18. Paygrade distribution of STG billets by ship class	44
Figure 19. Impact of force structure changes on STG requirements	44
Figure 20. MN manpower requirements for the PB12 force structure	45
Figure 21. Paygrade distribution of MN ship billets	45
Figure 22. FC Aegis manpower requirements for the PB12 force structure	46
Figure 23. Paygrade distribution of FC Aegis ship billets	47
Figure 24. Impact of force structure changes on FC Aegis requirements	47
Figure 25. SWO shipboard and Aegis Ashore manpower requirements	48
Figure 26. Paygrade distribution of SWO requirements	49
Figure 27. SWO manning levels on DDG-51 ships.	49
Figure 28. Impact of force structure changes on SWO requirements	50

List of tables

Table 1.	Change in authorized positions on DDGs over the FYDP	11
Table 2.	Manpower requirements for military-crewed ships	22
Table 3.	Manpower requirements for future military-crewed ships	22
Table 4.	Manpower requirements for precommissioning crews	23
Table 5.	Military manpower requirements for MILDEPTs on civilian-crewed ships	24
Table 6.	FY 2012 sea-duty manpower requirements for non-ship units	27
Table 7.	Projected FY 2018 sea-duty manpower requirements for non-ship units	27
Table 8.	Paygrade distribution of Aegis Ashore enlisted requirements	29
Table 9.	Summary of results by community	39
Table 10.	Paygrade structures by community	41
Table 11.	Sources of surface force military manpower requirements	54
Table 12.	PB12 military-crewed ship inventory for 2012 through 2026 and 2027 through 2041	57

Table 13. Naval Beach Group units manpower requirements (FY 2012 billets)	60
Table 14. Afloat staffs manpower requirements (FY 2012 billets)	60
Table 15. Patrol Coastal manpower requirements (FY 2012 billets)	62
Table 16. Aegis ashore long-range overseas manpower requirements (from [6])	63
Table 17. Future manpower requirements for the enlisted surface communities under the PB12 plans	66
Table 18. Future manpower requirements for the enlisted surface communities under the proposed PB13 plans	67

