

Changes in Sea Intensity Under Alternative Sea Manning Concepts

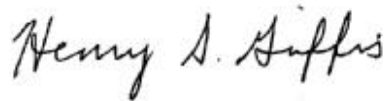
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A handwritten signature in black ink that reads "Henry S. Griffis". The signature is written in a cursive style with a large initial 'H' and 'G'.

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Outline



➤ **Background**

- How might ASMCs affect Sailors?
- Past, current, and forecast sea/shore ratios
- Implications for compensation
- Conclusion

Most Alternative Sea Manning Concepts (ASMCs) will modify not only the ratio of operational to nonoperational billets but also the amount and nature of actual sea time associated with being in an operational billet. In this annotated briefing, we first define some of the relevant ASMCs and discuss what is known about how they will affect Sailors. We then look at past and current sea/shore ratios for a subset of ratings that are heavily concentrated on surface combatants and therefore will be most affected by new manning and deployment patterns. Next, we examine the extent to which the changes in Sailors' careers might affect retention and the implications for compensation. Finally, we draw some broad conclusions from the study.

New operating concepts are changing every part of the fleet



- Increased surge capability: Fleet Response Plan (FRP)
- Greater forward presence: rotational crewing concepts
- Reduced manpower costs
 - Optimal manning (OM) in operational units
 - More sea- or mission-centric careers through “right-sourcing” non-military-essential billets

Many changes have already been made to the way the Navy employs its fleet, and more are being planned. They are based on having a more constantly ready, agile force, with more forward presence. Also, there is a belief that manpower costs can be reduced by finding the optimal billet structure for operational units and substituting government civilians or contractors for military personnel in shore billets when active-duty military are not essential.

Reference [1], another paper from this study, documents many of the alternative sea manning concepts and initiatives that are already in place or that are being experimented with or anticipated. Increased surge capability is in place with the Fleet Response Plan (FRP), which is discussed in [2].

There have been numerous experiments and initiatives with rotational crewing concepts, from submarines with Blue and Gold crews to the recent Sea Swap experiments to the anticipated 4 crews to 3 ships for the Littoral Combat Ship (LCS) platforms. All of these and the relevant references are summarized in [1].

References [3] and [4] discuss how technological change, different work methods, and other strategies might change manning. Reference [5] estimates tradeoffs between the savings from outsourcing military billets and the cost of increased sea pay when sea/shore ratios increase.

...But little is known about how Sailors will be affected



- Possible sources of increased strain
 - Greater sea intensity
 - Changes to PERSTEMPO
 - Increased in-port workloads
- Possible offsetting benefits
 - Increased targeted compensation
 - More homebasing
 - More interesting shore jobs (less “make work”)
 - Improved quality-of-life programs
- CNA is investigating these tradeoffs for N1Z and Pers-40

A concern of manpower policy-makers and analysts is whether these ASMCs will put undue strain on personnel and, if so, how Sailors can be compensated to make up for this increased strain. Not everyone in the Navy, however, agrees that the new concepts will make things worse for Sailors. For example, one senior official stated: “The FRP resets the force in a way that will allow us to surge about 50 percent more combat power on short notice and at the same time, potentially reduce some of the personnel strain of forward rotations.”

We will discuss in greater depth how the various ASMCs (i.e., the FRP, alternative crewing concepts, and OM) may affect Sailors. This slide simply outlines some of the issues that policy-makers and analysts have discussed and that we will deal with later in this briefing. Note, however, that when we mention that Sailors may have to be compensated for negative aspects of ASMCs, it does not necessarily mean paying them more money. Compensation could be in terms of providing educational benefits, quality-of-life programs, and so on. In fact, one argument for some of the ASMCs is that they allow Sailors to spend more of their careers in Fleet Concentration Areas (FCAs); such stability can be very attractive, especially for people with families.

The Head, Strategic Planning and Analysis Directorate (N1Z), and Pers-40 (the POC) asked CNA to evaluate likely consequences of alternative sea manning concepts for the sea-intensity and other aspects of Sailors’ careers. In addition, we were asked to examine the possible costs of compensating personnel for any negative aspects of the transition.

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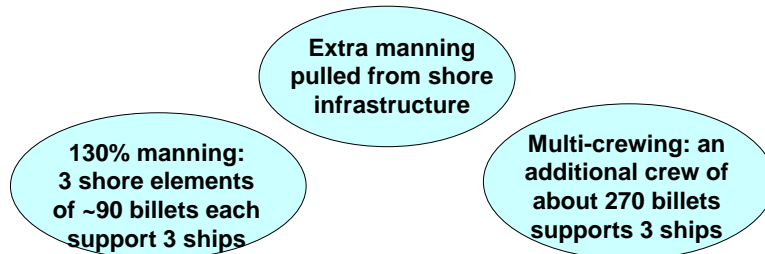
In this section, we will look at some of the proposed or ongoing ASMCs and focus on what they imply in terms of sea intensity, PERSTEMPO, and workloads.

Our discussion focuses on enlisted personnel because most of the experiments and most of CNA's data have to do with enlisted personnel. Also, traditional sea/shore rotation patterns are defined in terms of enlisted rather than officer careers. It would be useful, however, to undertake further study on the impact of ASMCs on officers' careers, retention, and compensation needs.

How will “extra manning” pools affect sea intensity?



Higher readiness requirements of FRP and streamlined manning of OM imply need for extra manning ... How can this be managed?



All of these plans have in common that shore billets supporting ships increase ... *without offsetting changes, sea intensity would decrease.*

The question is, how does the Navy pay for this?

FRP, OM, and Sea Swap are going to make it harder for the personnel system to always have the right person in the right place at the right time. FRP means that readiness must be maintained at more constant levels over more of the Interdeployment Readiness Cycle (IDRC), so new Sailors must be available to fill losses as soon as possible. OM means that crews are reduced to lower sizes in which each member is more critical; again, losses are harder to tolerate. Sea Swap programs with their constant rotations may put extra stress on crews and call for backups to replace members who need breaks. For all these reasons, programs that would put extra personnel at the ready are being developed in the fleets [1].

The Fleet Forces Command (FFC) program is referred to as 130-percent manning, or Sea-Centric Assignments, and is distinguished by an additional 25-30 percent billets being ashore but still assigned to the ship's command. The Pacific Fleet program is called an “on-deck circle” and consists of some billets that are assigned to various commands around the waterfront as a reserve pool for any ship in a Strike Force that may need extra people. Multi-crewing, which is not an active program yet, would create an extra crew—for example, a fourth crew to rotate between three DDGs. Although 130-percent manning and 4:3 multi-crewing would be managed much differently, they both involve having about 90 extra billets for each ship with a crew size of 270.

All these programs add to the number of shore billets that support each ship, or increase manpower costs per ship, unless the extra billets can be drawn directly from the shore infrastructure. If not, the question is how the Navy will pay for the extra manning pools or what other offsetting shore billet cuts it can take.

Are shore cuts an ASMC?



- Not directly related to FRP, OM, or rotational crewing
 - These concepts require more shore billets in extra manning pools
- But shore cuts do complement ASMCs
 - More mission-centric careers
 - Offset cost of extra manning pools
- Nature of shore duty changes as traditional shore billets are replaced by extra manning pool billets
- How far will shore cuts go?
 - Depends on size of extra manning pools and whether billets are part of existing shore manning
 - Also depends on how feasible and cost-effective shore cuts are as they proceed

The shore cuts are not in themselves part of FRP, OM, or rotational crewing. In fact, for these concepts to work, most policy-makers and analysts believe that extra manning pools will be needed ashore to provide surge capability, eliminate gaps, and make up for increased stress on crews. These extra shore billets, together with optimal manning sea billet reductions, would actually make Navy careers less sea intensive if no other changes were made.

The shore cuts, however, complement the FRP and rotational crewing by providing more mission-centric careers, and they help to offset the costs of the extra manning pools. In other words, ASMCs involve either the cost of creating extra pools of manpower or outsourcing existing shore billets to avoid that cost. It may not be purely a matter of cost, however, since one tenet of transforming the Navy is to create a smaller, more mission-centric force. In addition, the nature of shore duty will change as traditional shore billets are replaced by billets in the extra manning pools.

One factor that determines the extent of the shore cuts is the size of the extra manning pools. In the previous slide, the 130-percent manning and the 4-crew/3-ship scenarios both involve manning more shore billets per ship than the on-deck circle. The more modest size of the on-deck circle comes from sizing the pool to cover the number of unplanned losses. In addition, at least some of the billets for the on-deck circle are to be identified from existing billets and tagged as people who can be called up quickly. This can create an extra manning pool without creating additional shore billets.

Another factor that will influence how far to take shore reductions is the point at which they become no longer feasible or cost-effective. Obviously, outsourcing shore billets to pay for extra manning pools doesn't make sense if outsourcing has been pushed beyond the point where it is saving the Navy any money. We discuss this in more detail in the section on compensation implications.

Implications for sea/shore rotation policies



- The Navy is becoming more sea intensive
- Requires more sea duty from E5s and E6s and means of quickly filling gaps
- Paradigm shift or refinement of existing tools?
 - Targeted, expanded sea pay for Sailors who reenlist or extend at sea
 - Assignment Incentive Pay (AIP) for volunteers to fill gaps in sea billets
- Some of these policies are already in place and can be used, while other concepts are being tested

The Navy is moving toward a more sea-intensive force by changing not only the ratio of operational to nonoperational billets but also the amount and nature of mission-centric work done throughout a Sailor's career. Having higher levels of surge capability, training readiness, forward presence, or PERSTEMPO without additional endstrength (or while reducing endstrength) will change the nature of work and careers.

It is important, however, to keep the sea-centric concept separate from specific proposals for how it might be enacted. On one hand, a more sea-centric force is part of the Navy's future. On the other hand, it is open to question whether it should be accomplished within the existing scheme of sea/shore rotation or through new paradigms, such as 130-percent manning of some surface ships, on-deck circles for strike forces, or alternative crew rotation concepts. The most radical of the new manning approaches, such as Sea-Centric Assignments proposed by FFC, would do away with traditional methods of rotating Sailors back and forth from sea to shore assignments.

While it may turn out to be desirable to adopt such a system, it should not be seen as synonymous with a more sea-intensive force. The major feature of the more sea-intensive force is that the Navy will have to get more sea duty out of senior E5s and E6s and find ways to quickly fill unplanned losses. This could be done in a number of ways, including using the traditional sea/shore rotation policies and modifying, fine-tuning, and/or increasing existing incentive pays.

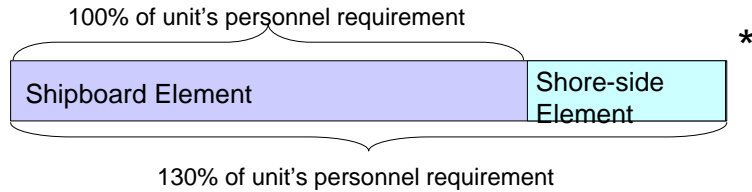
Existing and expanded incentive pays that would induce Sailors to spend more time at sea after the end of their first term or to fill unplanned losses include:

- An expanded sea pay premium targeted to those who reenlist or extend at sea. Targeting could be narrowed even more so the pay is received only by people in certain paygrades, ratings that are undermanned at sea, and Sailors who are extending at sea beyond their projected rotation date (PRD) (or staying until PRD).
- An Assignment Incentive Pay (AIP) could be offered to attract volunteers to fill gaps in sea billets. This would be equivalent to making all Sailors on shore duty a ready pool to fill gaps in fleet billets.

A final consideration is the cost of the various proposals. It may be more attractive to adopt less expensive alternatives to address the stresses of a more sea-intensive Navy. For example, theory and past empirical work indicate that flexible monetary compensation, targeted as finely as possible at those to whom you want to provide the proper incentives, will produce the most cost-effective policy. Thus, a combination of improved sea pays, AIP, and Selective Reenlistment Bonus (SRB), along with a version of the current sea/shore rotation system designed to give maximum flexibility, may be the best policy option.

At the same time, however, it may be possible to design some pilot programs to test the more radical programs, such as Sea-Centric Assignments and 4:3 alternative crew rotation.

One version of FFC's Sea-Centric Assignments



- Does 130% manning mean adding a 30% shore pool to each surface combatant?
- Or does it mean reducing active-duty shore manning to close to 30% of sea manning?

*This figure is adapted from the briefing "Sea Centric: What We Believe," CAPT Al Gonzalez, FFC N1, 10 Dec 2004

Whether 130-percent manning, on-deck circles, multi-crew/multi-hull, or other approaches are used, a critical question is whether the billets are a new component of shore billets (e.g., a detachment equal to 30 percent of each ship's manning that is to be added to the existing numbers of shore billets). If they are—that is, if they are not part of the existing shore infrastructure or no offsetting cuts are being made—sea-intensity or sea/shore ratios would fall under these programs. If the intention is to make the Navy more sea-centric and to reduce manpower costs, additional shore billets must be cut.

One example of using offsets in shore manning to compensate for the new shore-side readiness elements is found in a briefing by FFC N1 [6]. Various other versions of this briefing have used different numbers, but the core idea is the same. In this briefing, the implication is that most other active-duty shore billets will be replaced by these 30-percent shore-side elements. In particular, the briefing uses the following computation:

Current total inventories of billets (as of 2004)

Sea	180K
Shore	130K
Total	310K

If shore billets were reduced to only the 30 percent required to support sea-shore rotation with 180K sea billets, however, one would need only about a 60K rotational pool, leaving a sea-centric Navy of

Sea	180K
Shore	60K
Total	240K

The potential billet savings is thus 70K, although the work ashore would need to be addressed. Of course, this is only a potential billet savings, and there is the caveat that work ashore needs to be accomplished. Some of this work, presumably, is military essential, which means that military billets cannot be replaced by civilians or contractors. In other cases, as we will discuss, it may not be feasible or cost-effective to transfer all 70K of these billets out of the military.

Notice, however, the extreme difference between these two views of the 130-percent proposal. On one hand, if the 30-percent pool is added to existing shore manning, sea/shore ratios could decrease. On the other hand, if the 30-percent pool were pushed to the extreme and all billets not in the extra manning pools were civilianized or outsourced, the Navy as a whole would have 180 sea billets for every 60 shore billets. This would be 3 sea billets for every 1 shore billet, or in the traditional metric a 9:3 sea/shore ratio. Today, Navy-wide for E1-E9, only a handful of the most sea-intensive ratings approach 3 sea billets per 1 shore billet, and the average is 1.45. So, for the Navy as a whole to even approach 3 to 1 would be well outside historical precedents.

Elements of PERSTEMPO



- Traditional elements
 - Deployment length
 - Turnaround Ratios (TARs)
 - Time in homeport over 5-year period
- New rules in 1986: deployments no longer than 6 months, minimum TAR 2:1, 50% of time in homeport
- The minimum TAR rule may constrain rapid surge capabilities
- Other factors
 - Time under way, not deployed
 - Maintenance activities
 - Ports of call

In addition to sea/shore ratios, PERSTEMPO is another important aspect of the mission intensity of a Sailor's career. PERSTEMPO rules are designed to preserve Sailors' quality of life and retention. Traditionally, PERSTEMPO has been defined by the length of deployments, the TAR (time between deployments divided by deployment length), and the overall percentage of time spent in homeport over a 5-year period.

New PERSTEMPO rules, adopted by the Navy in 1986, may be broken under special circumstances. Ideally, Sailors would spend no more than 6 months deployed, then get 2 months back in homeport for every month the unit was deployed. In addition, over any 5-year span, each unit should spend no more than half of its time away from homeport (this includes not only time deployed but time under way when not deployed and time away from homeport for maintenance). These rules may be a major constraint to enacting FRP policies, especially the minimum TAR policy. The rapid surge capability for ships that have recently returned from deployments (the routine deployable phase) may conflict with this rule [2].

Other factors frequently mentioned as components of quality of service that are similar to, or involved in, the traditional PERSTEMPO measures include the amount of time a unit spends under way but not deployed, the length and frequency of maintenance availabilities and inspections, and opportunities to visit desirable ports of call [7, 8].

How will ASMCs affect PERSTEMPO?



- FRP
 - Little effect on length of notional deployment
 - But there are concepts of “surge” and “culture of readiness”
 - Emergency surge, surge ready, and routine deployable phases are 11 out of 27 months of IDRC: less predictable schedules
 - Sustaining readiness implies more time under way, not deployed
 - Crises met by shorter, more frequent surges rather than longer deployments
 - Length of maintenance availabilities reduced
- Alternative crewing
 - Depends on hull:crew ratio, 1:1 has no effect
 - Sea Swap may have fewer opportunities to visit desirable ports of call

Even though the FRP is designed to have little effect on the length of a notional deployment, it seems that it must increase the sea-centric nature of Navy careers in some sense. After all, the idea behind FRP is that the fleet will be in a greater state of readiness over more of the Interdeployment Readiness Cycle (IDRC). In particular, out of a 27-month notional IDRC, ships are deployed for 6 months and must be ready to deploy at short notice for 11 of the 21 months that they are back in homeport (the emergency surge, surge ready, and routine deployable phases) [2]. In the traditional deployment patterns, the notional Interdeployment Training Cycle (IDTC) was 24 months, 6 months of which they were deployed. After the deployment, readiness dropped and Sailors were not expected to deploy again until the beginning of the next IDTC. Thus, an FRP or Flexible Deployment Concept (FDC) increases the mission intensity of careers because it increases the proportion of time that Sailors are in a state of readiness awaiting a possible deployment.

In addition, sustaining readiness will involve more time in unit training, and some of this will be done under way. One standard is 8 to 10 days of integrated, underway training for every 3 months of sustainment [2]. Another CNA study conducted focus groups of Sailors on surface combatants and found that Sailors felt more negative about nondeployed time away than about deployments [8]. A summary of the focus group comments follows:

“Sailors said that they had not expected the nondeployed time underway when they enlisted and found the work arduous and without the same sense of mission that is associated with deployments. In addition, long work hours, irregular scheduling, and unanticipated changes to the schedule created difficulties participating in voluntary education or community activities, as well as scheduling problems for family activities or day care.”

The vision behind the FRP was “presence with a purpose,” which means that forces would only be surged forward if required by a crisis. So far, these shorter, more frequent surges have not been used [2]. In the past, crises that have required increased naval presence have usually been dealt with by lengthening the deployments of forces already on the scene [7].

One possible positive influence of FRP for crew morale is that the frequency and length of maintenance availabilities have been reduced [2]. In fact, new policies have led to a 50-percent reduction in length of some major availabilities. The focus group members who experienced a preplanned maintenance had somewhat higher attrition, so reducing their length could be helpful [8].

For alternative crewing concepts, one-to-one options, such as Sea Swap, should have no effect on PERSTEMPO since the Sailors are away from homeport the same amount of time, just on different ships. Reference [9] did, however, find one effect related to quality of service associated with PERSTEMPO. In the Sea Swap surveys, Sailors complained that they had fewer opportunities to visit ports of call on their way to and from forward deployments because they were flown to their ships. Also, when at their destination ports, they had to work to prepare the ship for the swap and so did not have time for liberty. The analysts pointed out that these problems could be solved by flying the Sailors out earlier or giving them leave at the end of their tour. This may be important because the authors of [8] used their focus group evidence to find that higher amounts of time in desirable ports decreased attrition by a modest amount.

Alternative crewing concepts and in-port workloads



- Sea Swap Sailors expressed dissatisfaction with workloads
- To get more forward presence from the same number of ships
 - One hull per crew means crews must work harder
 - More crews than hulls means costs increase

A CNA analysis of the PACFLT Sea Swap experiment found several factors that decreased Sailors' satisfaction [9]. A survey found that 73 percent of the Sailors reported that they would be less likely to stay in the Navy if all of their deployments were like their recent Sea Swap experience. Among the factors cited was that the in-port workloads were more strenuous because one crew was preparing to hand the ship over to the next crew.

The common denominator of alternative crewing initiatives is that they are designed to get more forward presence from the same number of ships. To do this, there are two different ways to manage crewing the ships:

1. Conduct one-for-one swaps, as in the Sea Swap program, in which the number of crews remains equal to the number of hulls. In this case, the workload for these crews must increase.
2. Buy more people (that is, move to a program with more crews than hulls). Examples of this are the 4 crews to 3 hulls anticipated for the LCS or Blue/Gold crews used by submarines. In this case, however, costs must increase.

In other words, more forward presence from the same number of ships means that something must give in terms of their crews. Either more people are needed or the people you have must work harder.

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In the last section, we explored what some of the new manning concepts imply about how high sea intensity must become to support them. In this section, we will look at actual sea/shore ratios to see how far off or how close they are to those levels.

The data



- We chose a subset of ratings that are important on surface combatants
- We used actual BA from 1994-05 and projections for 2006-07 to calculate sea/shore ratios by rating and paygrade group
- We examined trends from 1994 on in sea/shore ratios and numbers of sea and shore billets for 2004-07

We decided to focus our analysis on surface combatants because they correspond most closely to traditional notions of sea-to-shore rotation. This makes it easiest to contrast traditional concepts and historical data with anticipated changes. Some aviation squadrons are shore based, so those that are assigned to strike groups are not always present with them. Support ships are being transferred to the Military Sealift Command, and the submarine community has its own deployment concepts.

For the surface warfare community, then, we wanted to establish historical baselines for sea/shore ratios. We also wanted to be able to see how recent and anticipated changes in sea and shore billets might be changing sea intensity. For example, recent budgets have emphasized cutting active-duty shore billets, and we wanted to see whether and how this has translated into changes in sea/shore ratios.

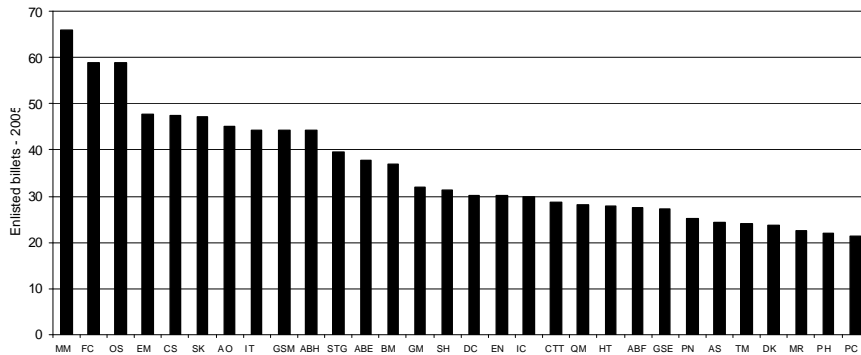
To do this, we pulled Billets Authorized (BA) data for our sample of ratings from CNA's billet files. The data are actual numbers for 1994 through 2005 and projections for 2006 and 2007 (from the 2005 file).

Note that, as of 2005, almost no ASMCs would have been programmed into the billet file. The only exception would be some of the optimal manning initiatives on surface combatants.

Choosing the ratings



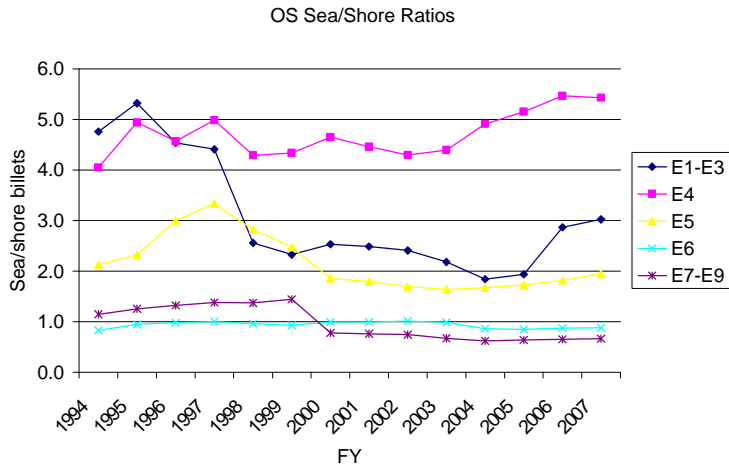
Ratings in order of percentage of billets on surface combatants



We wanted to look at ratings that were most heavily concentrated on surface combatants, both in terms of the percentage of people with that rating who serve on surface combatants and in terms of absolute numbers. To construct this chart, we looked at September 2005 Enlisted Master Record (EMR) data. We identified, by rating, everyone in a Unit Identification Code (UIC) that was either a CG, CV, CVN, DD, DDG, or FFG and expressed that as a percentage of everyone in the Navy who held that rating. For example, over 65 percent of MMs in the Navy as of September 2005 were in surface combatant UICs. This declined to just over 20 percent for PCs.

We chose 20 percent as a cutoff because it is followed by a sizable drop. We also excluded Gendet ratings, which left us with the 30 ratings on the slide to examine. Of these 30 ratings, some were more difficult to characterize. The ABE, ABF, ABH, and AO ratings, for example, all had large increases in E1-E3 sea billets in FY 2005 that drove their sea/shore ratios in the lowest paygrades to unprecedented levels (see the backup slides for the AO rating). Presumably, however, this has more to do with absorbing the AN billets than with new deployment concepts. Other ratings, such as CTT, were difficult to analyze because of rating mergers (CTT merged with EW in 2003). Finally, other ratings were less interesting because of very small absolute numbers (AS, DK, MR, PC, PH, PN, TM) or because sea/shore ratios were fairly stable throughout our sample period (BM, SK). We also tried to focus on ratings that were cut in optimal manning drills. In this section, we will present graphs for one particular rating, OS, and summary slides that cover all of the ratings we analyzed in greater detail. The backup section contains more of the graphs for individual ratings.

OS: increasing sea intensity for lower paygrades



This slide looks at the OS rating as one example of trends in sea/shore ratios. OS is representative of many ratings; ten others are presented in the backup section. These are the common trends we observed looking at actual sea/shore ratios for 1994 to 2005 and projected ratios for 2006 and 2007:

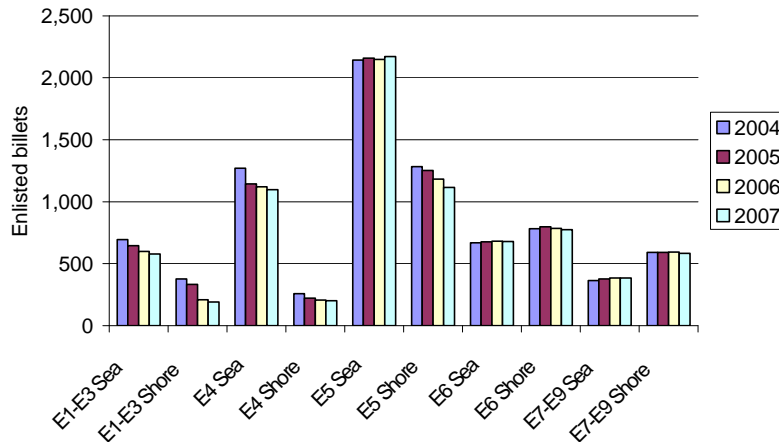
- Ratios for the most junior paygrades, E1-E3 and E4, rise from 2004 to 2007—generally to levels outside their previous range. In this chart, the E4 sea/shore ratio rises to 5.4 sea billets/shore billet in 2007, above its range before 2004 of 4.3 to 5.0.
- Ratios for more senior paygrades tend to remain flat or to rise but remain within previous ranges. For OSs, the E6 ratio stays fairly constant. The E5 ratio climbs to 1.9 sea billets/shore billet, above the previous level of 1.6 to 1.7 in the early 2000s, but still below levels in the late 1990s.
- Sailors in paygrades E1-E4 are usually in their first terms and, in the sea-intensive ratings associated with surface combatants, are expected to be on their first sea tours. Thus, historical ranges of 3 to 5 sea billets/shore billet are not surprising.
- For E5 and E6, virtually all ratings had sea/shore ratios closer to 1.0 to 1.5 sea billets/shore billet from 1994 to 2004,¹ some climbing slightly from 2004 to 2007. Even with the 2007 increases, however, ratios remained close to previous levels and far from the sea-centric concept that would imply 3 sea billets/shore billet.

1. The E5 ratio of over 2 in 1994-97 shown here for OSs occurred in a few ratings (see backup slides for details), but in all cases the ratio dropped below 2 sea billets/shore billet in the early 2000s.

OS: billet cuts 2004-07



OS Sea and Shore Billets



Again, this slide uses the OS rating to illustrate common themes for many of the surface combatant ratings. Slides for ten other ratings are in the backup section. This chart shows the number of enlisted sea and shore billets by paygrade group for the most recent years (2004 and 2005 are actuals, 2006 and 2007 are projections). Looking at the number of sea and shore billets shows the source of changes in sea/shore ratios. The common themes that emerge are:

- The increases in E1-E3 and E4 sea/shore ratios were caused by cuts in the number of shore billets. Since these ratings started with very few shore billets, cutting relatively few billets in absolute numbers produced large increases in sea/shore ratios. This can be seen for OSs for E1-E3s in particular, but it also shows up in a number of the backup slides. Again, although these increases in sea intensity may look remarkable on the graphs, in sea-intensive ratings most E1-E4 billets should be for first-term personnel doing their first sea tours. Cutting a few shore billets in these paygrades does not contribute substantially to the overall sea intensity of Navy careers.
- There are also some cuts to shore billets at the higher paygrades, especially for E5s. The shore billet cuts at the E5 level would have been difficult to make because that is when many Sailors are rotating back to shore after their first sea tour. This does, therefore, show some determination to downsize the shore infrastructure. In general, however, the size of these cuts was fairly small.

- Very few E6 or E7-E9 shore billets were cut. The point is that, if the shore infrastructure is to be reduced to the point that active-duty military billets perform only military-essential functions and form the 30-percent extra manning pool for sea duty billets, the proportion of shore-to-sea billets at higher paygrades must be reduced. It is not sufficient to balance sea billets at lower paygrades with shore billets at higher paygrades because the two types of personnel cannot be substituted when backfills are needed for unplanned losses or for surge capability.

- There were also cuts to sea billets at several paygrades over several ratings in FY 2005. The cuts were most common and usually largest in paygrade E4, but other paygrades were also cut. Ratings with significant cuts in 2005 (and the paygrades affected) included the following:
 - o FC (E4, E5)
 - o GM (E4, E5, E6)
 - o GSE (E4, E5)
 - o GSM (E4, E5)
 - o IC (E4)
 - o OS (E4)
 - o QM (E4, E5)
 - o STG (E4, E5, E6)

In many cases, BA rose again after the 2005 cuts. Notice that most of the ratings with sea BA cuts in 2005 are also on lists of ratings that were cut in optimal manning programs on surface combatants.

Summary of sea/shore ratio changes



- In 2004-07, ratios for E1-E3 and E4 rise above previous levels
 - Typical previous range: low of 3 sea billets per shore billet to high of 5
- Ratios for more senior paygrades remain flat or rise, but within previous levels
 - Typical previous range: low of 1 sea billet per shore billet to high of 2
- Even with cuts, Navy remains far from “sea-centric” concept in 2007
 - Need more sea duty from E5s and E6s

In this section, we’ve used the OS as an example, but these summary findings can be generalized to most of the ratings we examined (see the backup slides for more detail).

In general, historical ranges for the sea-intensive first-term paygrades of E1-E3 and E4 have been from 3 to 5 sea billets per shore billet, depending on how sea intensive the rating is. Starting in 2004, these ratios began to climb and rose above these historical levels in many ratings.

Sea/shore ratios in the more senior paygrades are much lower, typically from 1 to 2 sea billets per shore billet. Some of these ratios rose from 2004 to 2007, others remained constant, but even those that rose tended to stay within historical levels.

Summary of 2004-07 sea and shore billet reductions



- Increases in E1-E3 and E4 sea/shore ratios caused by shore billet cuts
 - Cutting small numbers implies big swings for sea-intensive first-term personnel
- Some shore billet cuts at higher paygrades
 - Especially E5s—hard to do but generally small numbers
 - Very few E6-E9 billets cut
- Some cuts to sea billets in FY 2005
 - Concentrated in a few ratings and E4, but other paygrades cut, too
 - Mostly in OM ratings

The OS rating and the other ratings we examined illustrate that the shore cuts taken by 2004 and programmed through 2007 have not yet made substantial inroads into E5 and above shore billets. The largest changes have been in E1-E3 and E4 shore billets, but these first-term paygrades are sea intensive anyway. There were modest cuts at E5 but, as could be seen from the changes in sea/shore ratios, not enough to push ratios close to 3 sea billets per shore billet.

Outline

CNA

- Background
- How might ASMCs affect Sailors?
- Past, current, and forecast sea/shore ratios
- **Implications for compensation**
- Conclusion

We have discussed several aspects of ASMCs and their possible effects on Sailors and we have looked at baselines and changes in sea/shore ratios. In this section, we will examine the extent to which these changes might affect retention and thus increase (or decrease) the amount of compensation that it might take to keep retention constant.

From our discussion so far it is clear that there are many variables in how ASMCs might affect Sailors. It is clear that it will be difficult to predict the effect of ASMCs on manning and retention. One thing we recommend highly, therefore, is that the Navy carefully monitor and analyze any initiatives or experiments for their effects on retention.

Aspects of ASMCs that might affect compensation



- Sea/shore ratios
 - The big picture
 - A sea-intensive rating
- PERSTEMPO
 - Sustainment vs. surges
- Other ASMC elements
- Offsetting factors

First, we will look at possible changes in sea/shore ratios. As we have seen, the ASMCs could imply a decrease in sea/shore ratios if 130-percent pools, on-deck circles, or multi-crewing were adopted in conjunction with them. However, if substantial shore cuts are adopted as a means of paying for these extra manning pools or simply at the same time as a move toward a sea-centric Navy, sea/shore ratios will increase. A radical proposal from FFC would cut shore manning to close to 30 percent of sea manning, driving sea/shore ratios up to close to 3 sea billets per shore billet. We look at the implications of these proposals both for the Navy as a whole and for the example of the sea-intensive OS rating we examined in the last section.

For PERSTEMPO, we look at the more traditional factors, such as time deployed and TARs, but also consider that people will spend more of their shore time in a state of “surge readiness.” That will mean more time under way but not deployed as they sustain readiness and a higher level of uncertainty. We will also examine maintenance availabilities, opportunities for desirable ports of call, and in-port workloads.

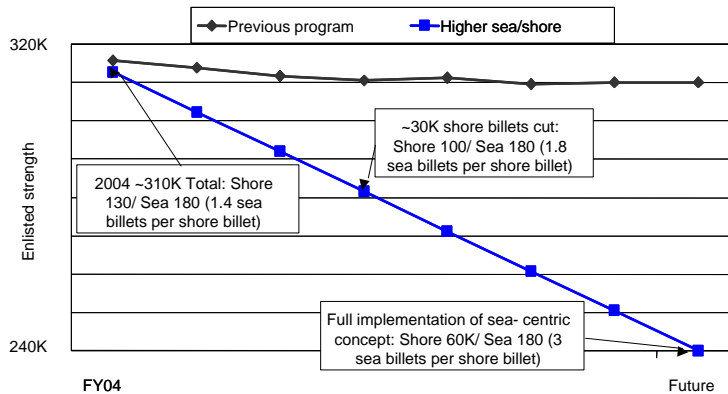
To offset any negative effects on retention, the first option is to use finely targeted compensation tools, but we will also discuss non-compensation-related options.

Effects of sea/shore ratios: the big picture



Offsetting manning pools for FRP and OM may increase need for shore billet cuts

- FFC Sea-Centric Assignments would reduce shore manning to close to 3 sea billets per shore billet
- Many studies show negative impact of increased sea duty on retention



According to the FFC briefing, in 2004, there were about 310K enlisted billets in the Navy, of which 130K were shore duty and 180K were sea duty. The overall sea/shore ratio was 1.4 sea billets per shore billet [6]. A cut of 30K shore billets, which was proposed by some for 2007 and will be discussed in more detail below, would bring the Navy down to 100K shore billets and 180K sea billets, or 1.8 sea billets per shore billet. This assumes that the extra manning pools are all absorbed in the 100K shore billets. If the sea-centric concept could be fully realized so that the only active-duty enlisted billets were in the 30-percent shore-side elements that support operational units, shore billets would be cut by an additional 40K (a total of 70K). At that point there would be 60K shore billets and 180K sea billets, or 3 sea billets per shore billet. In the traditional metric, this would be 9:3 sea/shore rotation.

Going down this glide slope implies a substantial increase in sea/shore rotation—outside the ranges found in our data for surface combatant ratings in the previous section for all but the most junior ratings. Many studies have shown that increases in sea duty have a significant negative effect on retention and that increases in compensation have a significant positive effect (see [10] for one study and [11] for a survey of other studies). These studies, however, did not have samples where the number of shore billets was cut in half or sea/shore ratios were more than doubled. It is difficult, therefore, for us to predict how much extra compensation might be needed to compensate for this increase in sea duty. Thus, it would be necessary to study carefully how any such sweeping plan might affect retention.

It is also entirely possible that the full sea-centric concept will not be implemented, as will be discussed on the following slide.

Will voluntary incentives generate enough extra sea duty?



- Cost vs. savings analysis for outsourcing first 30K shore billets
 - In July 2004 briefing to CNO, CNA estimated that, for the first 30K enlisted shore billets cut, about \$160M of the \$500M savings would have to pay for sea duty incentives
 - Overall sea billets per shore billet would rise from 1.4 to 1.8
- As more shore billets are cut
 - Responsiveness of Sailors to extra compensation will not be linear
 - Remaining shore billets may be in paygrades or occupations that are not suitable for extra manning pools
 - Remaining shore billets are more likely to be military essential
 - Competitions with high savings may become scarcer

In a July 2004 briefing to the CNO, CNA performed a cost-benefit analysis for outsourcing the first 30K billets in the previous slide. This was an update of the analysis done in [5] and [12]. The briefing showed that the savings from outsourcing about 30K enlisted billets should be on the order of \$500 million. Of that, roughly \$160 million would have to be spent on a variety of compensation tools to induce Sailors to voluntarily undertake the extra sea duty involved with the loss of those shore billets. In terms of the way we have been expressing sea/shore ratios in this document, the 30K cut in shore billets (assuming sea billets remain constant) would increase sea/shore ratios from 1.4 to 1.8 sea billets per shore billet.

Although this first 30K cut would be cost-effective, 32 percent of the outsourcing savings would still have to be spent on targeted sea duty incentives. As more shore billets are cut, one would expect that percentage to increase for several reasons. First, the responsiveness of Sailors to extra compensation will not be linear, as the data and extrapolations used in [5] and [12] show. Second, the extra manning pools call for Sailors in particular paygrades and occupations, and these might not match up with the shore work that needs to be done by active-duty military people. That is, the E7 QM left on the shore roster will not be able to fill in for an E4 ABE billet gap. Third, there are limits on the right-sourcing process beyond which competitions may no longer be feasible or worthwhile—for example, when a function has a high proportion of military-essential billets or when billets cannot be bundled into a function that contractors find it profitable to bid on. Finally, the process may eventually proceed to a point where competitions with high savings are too scarce to cover the costs of compensating Sailors for increased sea duty.

Effects of sea/shore ratios: a sea-intensive rating



- Looking at sea/shore ratios for the entire Navy can be misleading because more senior shore personnel cannot be substituted for first-term sea personnel in the extra manning pools
- Using the OS example: just to get to 2.5 sea billets per shore billet, 950 shore billets would have to be cut from E4-E9
 - E4 has only 200 shore billets
 - Can 35% of this sea-intensive rating's senior shore billets be cut?

OS: FY 2007 projected billets and reduction needed

Paygrade	Sea	Shore	Ratio
E4	1,090	200	5.5
E5	2,170	1,110	1.9
E6	680	780	0.9
E7-E9	390	590	0.7
Total	4,330	2,680	1.6
Future	4,330	1,730	2.5
Necessary reduction		950	(35%)

The previous slides looked at how sea/shore ratios might change under ASMCs for the Navy as a whole. This slide considers the example of one particular rating, the OS rating that we examined earlier. In some cases, looking at the Navy as a whole can be misleading because it implies making substitutions across ratings and paygrades that are actually not possible.

This table shows the number of sea and shore billets in the OS rating in the FY 2007 projections (taken from the September 2005 billet file). We've excluded E1-E3 billets. Sea/shore ratios range from 5.5 sea billets per shore billet for E4 down to 0.7 for E9. Overall, there are 4,330 sea billets and 2,680 shore billets, or 1.6 sea billets per shore billet.

In this example, rather than the extreme of 3 billets for every shore billet, we've aimed for a more modest future reduction that would yield a ratio of 2.5 sea billets per shore billet. Assuming that the number of sea billets remains constant, this would imply 1,730 shore billets. This would be a cut of 950, or 35 percent, of the shore billets. Since there are only 200 E4 billets, most of these cuts would have to be made in the second and third terms. Is it easy to imagine finding almost a third of a sea-intensive rating's senior shore billets to cut?

Summary of sea/shore ratio retention and compensation effects



- The extent of shore cuts associated with ASMCs is uncertain
 - How is 130-percent manning, or the extra manning pool, defined?
- The distance the Navy will go down the glide slope is uncertain
 - Outsourcing is cost-effective at the margin, but many factors change as more billets are cut
- It may be hard to cut large numbers of senior shore billets in sea-intensive ratings
- Need to monitor and analyze effects on retention, attrition, enlistment

We have seen that estimating the retention and compensation effects of sea/shore ratio changes is difficult because the magnitude of the changes is not well understood. ASMCs, such as FRP, OM, and alternative crewing concepts, actually call for increased shore components to deal with readiness needs (and OM also decreases sea manning). This would decrease sea/shore ratios. The cuts in shore billets are called for as a way of (a) making careers more mission centric and (b) paying for the ASMCs' extra manning pools. There is wide disagreement, however, about how big these pools should be, ranging from 30 percent of ship's manning to 5 percent of a strike force's manning.

Economic factors also influence how much outsourcing the Navy might do. CNA research has shown that cuts of up to 30,000 shore billets can be cost-effective, but they still require that about a third of the savings be spent on offsetting compensation costs. As more cuts are made, savings will go down and costs up in a nonlinear fashion.

Finally, a closer look at an individual rating revealed that close to a third of its senior shore billets would have to be cut to meet a goal of 2.5 sea billets to 1 shore billet. This could be quite difficult to accomplish.

All ASMCs break new ground in terms of increasing sea/shore ratios or changing the nature of shore billet attributes, so it will be important to carefully monitor and analyze these initiatives and experiments. Only then will we be able to accurately predict how these new policies affect retention, attrition, and enlistment.

Will Sailors have to compensated for PERSTEMPO changes?



- The IDTC was already changing, so FRP may have little effect on traditional PERSTEMPO measures
- Sustainment is likely to have negative retention effects
 - Training to sustain readiness means more time under way, not deployed, which lowers retention
 - CNA research using personnel file data confirms this
 - Uncertainty of surge periods may hurt morale in same way as uncertainty of time under way, not deployed
 - CNA focus group evidence confirms effect of uncertainty
 - Requires further study
- Surges by themselves are unlikely to affect retention
 - Only reason to surge is to provide presence with a purpose
 - CNA research showed that long deployments during crises weren't associated with lower retention
 - No reason to believe that responding to crises with shorter, more frequent deployments would affect retention differently

Although the notional IDTCs before the FRP was adopted were 24 months, actual carrier cycle lengths have been increasing since the mid-1980s to about 31 months [13, 14]. In addition, average deployment lengths have been fairly constant at 6 months since the new PERSTEMPO rules were adopted in 1986, with more long deployments during crises [7]. Therefore, the average lengths of deployment cycles and deployments before and after the FRP probably will not differ much.

What changes have occurred due to the FRP? One was the front-loading of maintenance (i.e., when the ship returns to homeport) so that it remains ready during its routine deployable phase. Another supposed change was to keep the levels of manning more constant over the IDRC and avoid the “bathtub” effect in which manning drops between deployments. Another paper in this project, however, shows that the bathtub effect did not occur in the past to the extent believed [15].

So, on one hand, other than maintenance effects (which will be discussed next), there should be little effect on retention caused by FRP changing traditional aspects of PERSTEMPO. On the other hand, for there to be a more flexible and agile fleet without increasing manning, it would seem that Sailors on shore duty must work harder to maintain constant readiness and that their lives must become more uncertain.

In fact, in a previous slide, we pointed out that a requirement to sustain readiness during surge-ready periods of the FRP is to have 8-10 days of underway training per 3 months of sustainment. A CNA study using data from the Enlisted Master Record (EMR) and the Ship Employment History found that underway time, nondeployed had a statistically significant, negative effect on retention [7]. In particular, a 25-percent increase in underway time decreased retention rates for the zone A Sailors in the sample by 0.6 percentage point. The sample in that study was zone A Sailors with 4-year obligations assigned to a surface ship for at least 30 months. The authors of [7] also excluded Sailors who made their decisions while deployed. The sample spanned 1988 to 1999, and average reenlistment rates were 26 to 39 percent.

Another study conducted focus groups with over 400 enlisted Sailors and then linked their responses to actual EMR data on whether they attrited in the years following the survey. The years of the survey were FY 2000-01. This study also found negative effects on attrition: every 10-percent increase in underway time, nondeployed decreased attrition by 0.9 percentage point [8].

In addition, as was documented on the previous slide, the Sailors in these focus groups mentioned the uncertainty or unpredictability of their schedules as a reason they disliked nondeployed time away. The unanticipated changes to schedules made it difficult to participate in a variety of activities and also created problems in family life. This result was for an 8- to 10-day spell of underway training for a Sailor already on sea duty. It would require further study to see if the effect would be the same, worse, or better for a Sailor assigned to a shore billet similar to an extra manning pool.

Although this evidence is strongly suggestive, we can only draw analogies to the probable effects of remaining in a state of readiness under the FRP. More research needs to be done to see if people who serve in the surge-ready periods do experience higher attrition.

If a surge does occur, however, it may not in itself lower retention. Reference [7] also measured the effect of the long deployments in two periods of crisis. The first was FY 1991, the year of Desert Shield/Desert Storm, and the second was FY 1994, the year of Bosnia and Haiti. This study found no statistically significant effect of long deployments on reenlistments. The authors attributed this to the limited number and special nature of long deployments following the 1986 PERSTEMPO policy. All the long deployments were associated with crises, and the authors hypothesize that, when Sailors feel that there is a purpose to extending the deployment, it will not hurt their morale and lead to lower retention.

By analogy, if the surges under the FRP are all done to provide “presence with a purpose,” there is no reason to believe that Sailors would not have the same response and suffer no loss of retention. Again, it would require further analysis to confirm this hypothesis.

Other ASMC elements also have retention pros and cons



- FRP reduces frequency and length of maintenance availabilities
 - CNA focus group evidence shows that this would have a positive, but relatively small, effect
- Sea Swap can mean fewer opportunities to visit desirable ports of call
 - Sea Swap survey and focus group evidence indicates a negative effect
- Decreases in-port time and lower manning will increase workloads
 - Affects both workload and ports of call

The CNA focus group Sailors also cited the following as reasons for attrition: increases in workload over the deployment cycle, periods of heavy workload, and unnecessary work [8]. In particular, they said that certain in-port periods involve unusually long hours. Major preplanned maintenance and inspections are two categories they usually mentioned. The surveys and the statistical analysis in which the survey data were linked to EMR data, however, both confirm that the effect of maintenance activities appears to be less than that of nondeployed time away.

The focus group participants mentioned ports of call as a favorable aspect of deployments and naval service. Ports of call were especially important to junior Sailors. Some were more highly dissatisfied, however, because they got to visit fewer ports than expected and fewer exciting ports. In addition, some ports, particularly in the Middle East, were actively disliked. Another issue was that many ports are working ports in which they may have had little or no liberty or were under many restrictions.

These concerns were amplified in the Sea Swap experiment, as was discussed earlier. There were fewer opportunities to visit desirable ports and higher workloads while in ports.

The study that linked focus group responses to EMR attrition data asked respondents to rate ports of call and grouped them into three categories: least desirable, desirable, and most desirable [8]. They found a significant, but small, effect on lowering attrition of spending more time in good ports. The Sea Swap evaluation also surveyed the participants in the swap and linked responses to subsequent attrition data from the EMR. They found that the loss of “quality” ports of call was a very important cause of increased attrition.

Many factors of ASMCs are likely to affect workloads—both in port and at sea. The desire to maintain or increase forward presence while lowering active-duty endstrength is likely to put strains on the force unless outsourcing is conducted successfully. Since we can only conjecture about how in-port workloads will change under ASMCs and have little data on how in-port workloads affect retention, however, it is difficult to predict how retention might change. Again, this is an area to continue to track and analyze the effects of new policies on retention.

What other factors can offset these changes?



- Compensation
 - Finely targeted
 - More sea duty from senior enlisted in sea-intensive ratings, quickly fill gaps at sea
 - Further study regarding effect of FRP sustainment on retention
- But there are some potential non-compensation factors
 - Non-FCA shore cuts will mean more homebasing
 - Shore jobs will be more directly related to mission; less “make work”
 - Quality of life (QOL)

We have seen that many aspects of ASMCs will affect Sailors and, in turn, have studied some of the retention effects associated with these changes. To continue to recruit and retain a high-quality workforce, the Navy will have to offset negative effects of ASMCs on retention. How can it do this? The primary tool probably will be compensation targeted as finely as possible at those people the Navy might lose due to ASMC changes. In particular, it would want to target extra compensation to get senior enlisted to take on more sea duty in mission-intensive ratings. It will also want a compensation tool or mechanism that will allow it to quickly fill gaps at sea.

In addition, further study should be done to confirm whether the sustainment aspects of FRP have a negative effect on retention of personnel. If so, the Navy should consider how a pay could be designed to target people in this phase of the deployment cycle.

Some components of ASMCs are inherently positive, however, and will help to offset any negative effects. For example, if outsourcing leads to cutting billets outside Fleet Concentration Areas, the remaining billets will make active-duty service more focused around home bases. This will increase geographic stability, which is attractive to most people, especially those with families. It also saves the Navy money on moving people.

Making shore cuts so that remaining jobs are more directly related to what Sailors do in their operational units should make their jobs more interesting. It will reduce the feeling that shore jobs are make-work jobs to provide a rest between periods of sea duty. It will also help the Navy because it will lead to more accumulation of skill and experience during shore tours. Finally, although this is not a direct consequence of the ASMCs, the Navy leadership could invest money in QOL programs or educational benefits.

Outline

CNA

- Background
- How might ASMCs affect Sailors?
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- Implications for compensation
- **Conclusion**

Conclusions



- ASMCs involve incurring the higher costs of extra manning pools or offsetting these costs by cutting existing shore billets
- If choice is to cut shore billets, right-sourcing can be cost-effective on margin but may not be on larger scale
- PERSTEMPO retention impacts are more likely to be from sustainment than surges
- Finely targeted compensation may offset sea/shore ratio and PERSTEMPO changes

The FRP, alternative crew manning, and OM all call for extra manning pools that the Navy can call on for readiness reasons—to fill gaps, when called on to surge forward, or to relieve stress on the crew. The Navy must either pay the cost of these extra billets or cut existing shore billets. If the choice is to cut shore billets, there is wide disagreement as to how deep the cuts would have to be. First of all, the size of the extra manning pools is still in question. Second, there may be economic constraints on how many cuts will be cost-effective. We have evidence that cutting shore billets is cost-effective on the margin but may not be cost-effective on a larger scale.

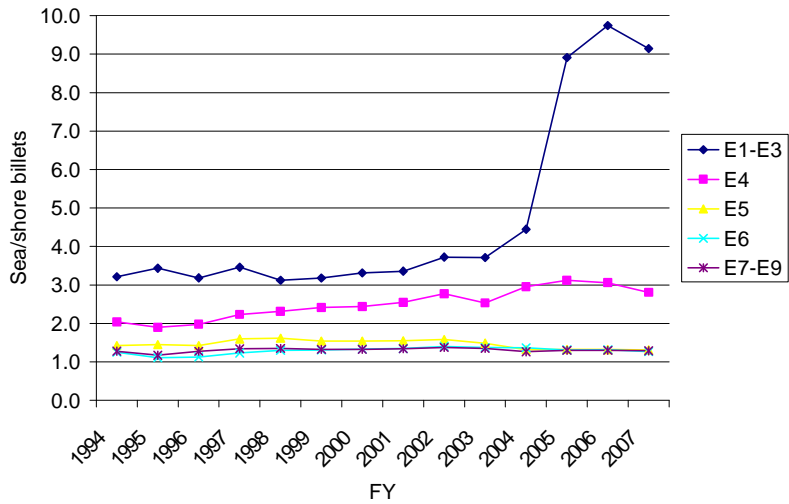
The sustainment phases of FRP are the times when the ship must be ready to deploy at short notice. We argue that, by analogy, retention may be lower for Sailors who have gone through these phases because they have experienced more nondeployed time under way and greater unpredictability of scheduling. On one hand, other studies have found negative effects of these factors; however, as FRP progresses, more research should be done to see if these results are confirmed. On the other hand, we expect little effect of the surges themselves on retention because, if they happen, it should be to cover a crisis. Past studies have shown that long deployments during times of crisis are not associated with lower retention, so there is no reason that shorter, more frequent surges to provide presence with a purpose would lower retention.

Finally, perhaps the best way to offset negative retention effects caused by ASMCs would be compensation tools targeted as finely as possible at those whom the Navy might lose. Two examples would be (1) a pay designed to get more senior enlisted in sea-intensive ratings to serve at sea or (2) a pay that compensates people for the rigors of the sustainment phase of the FRP.

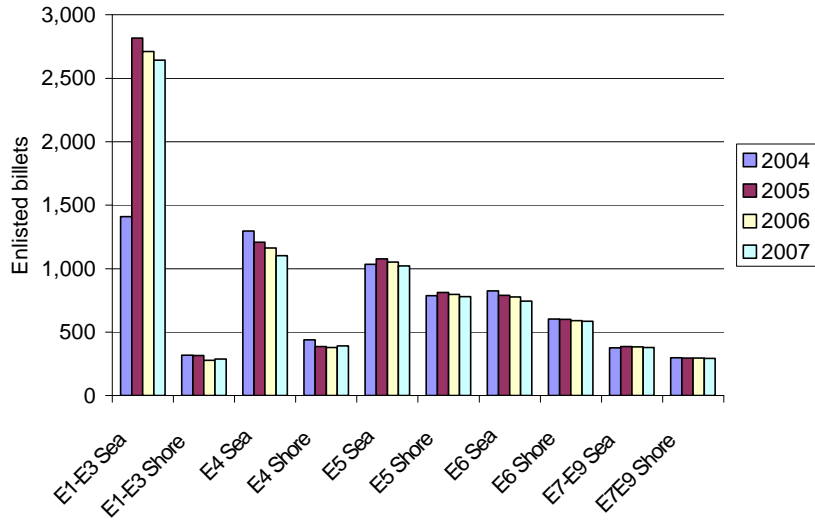
Backup

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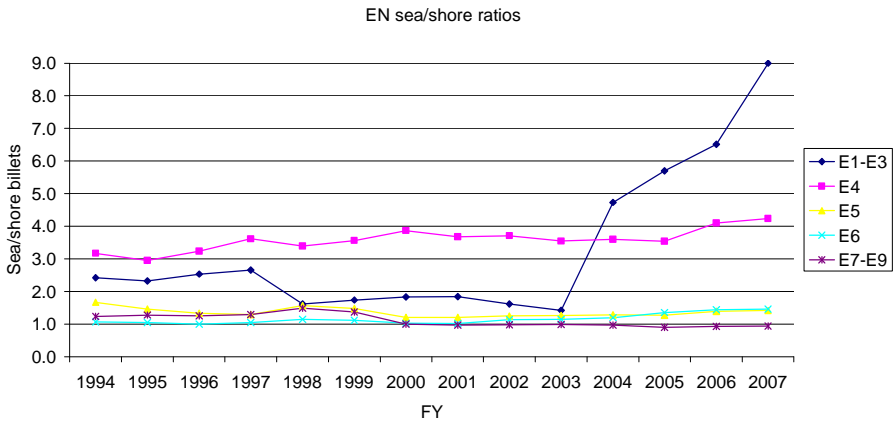
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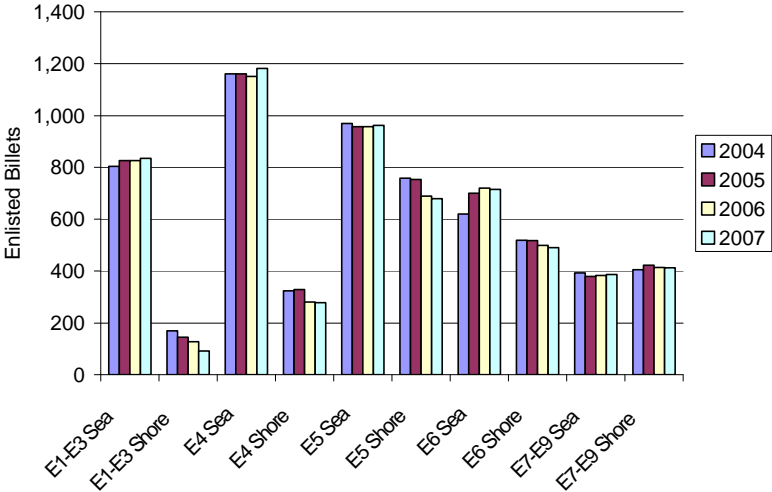
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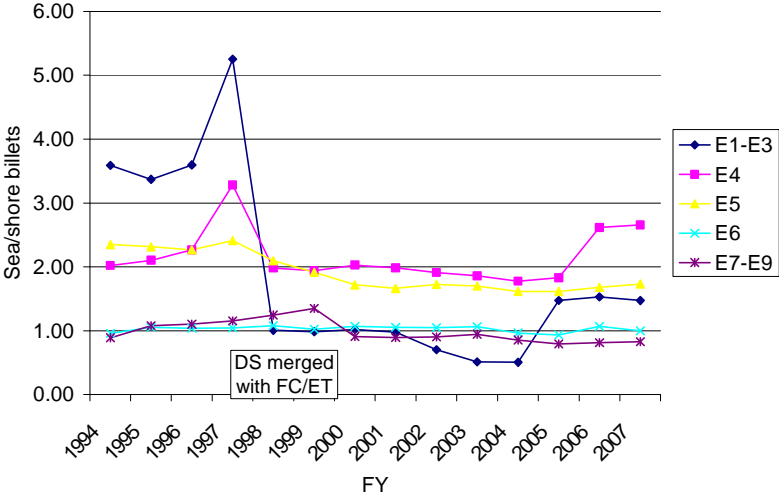
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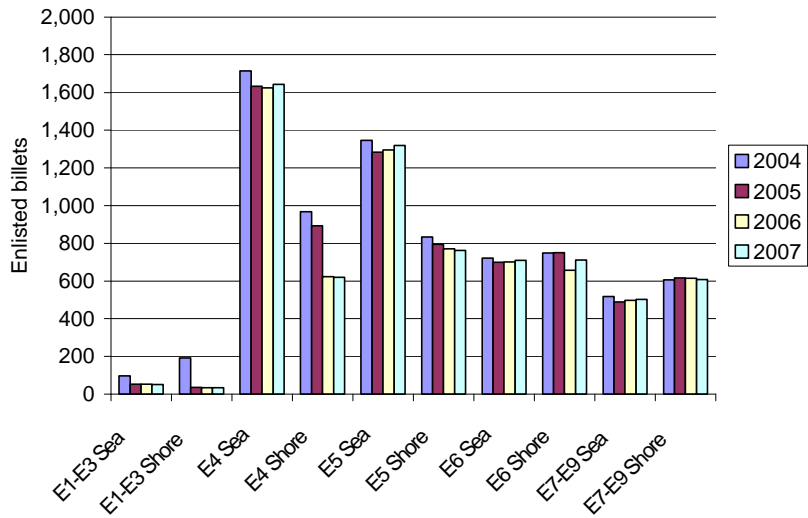
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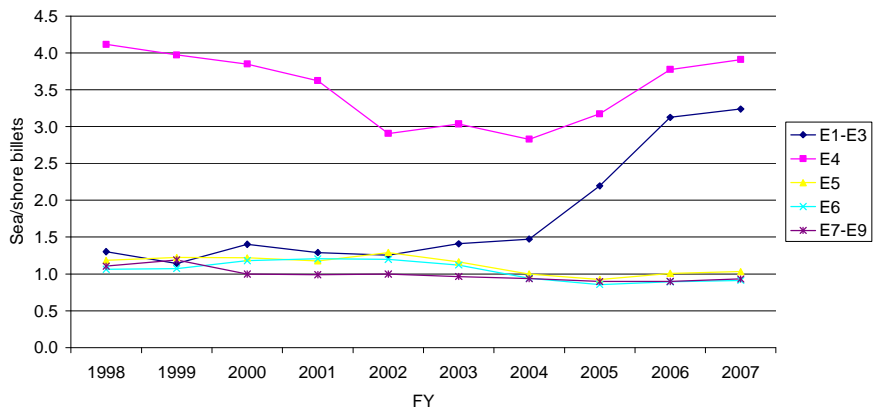
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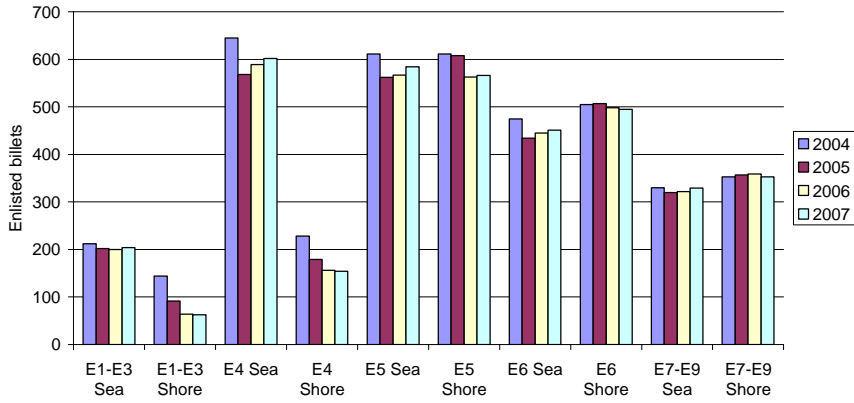
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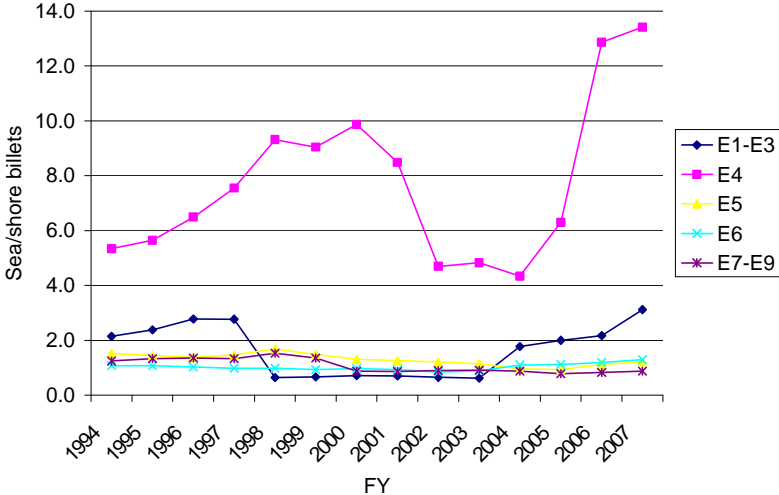
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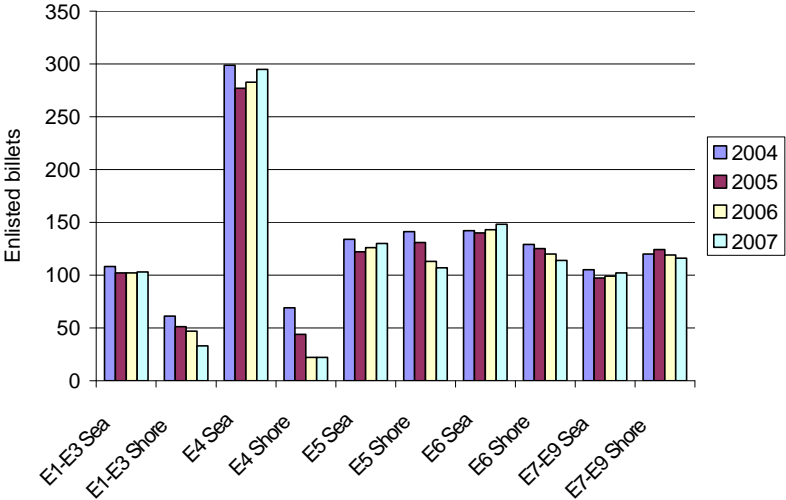
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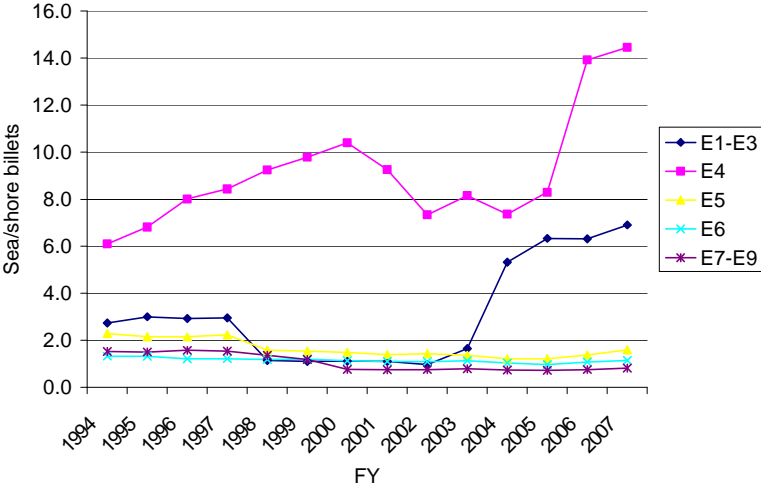
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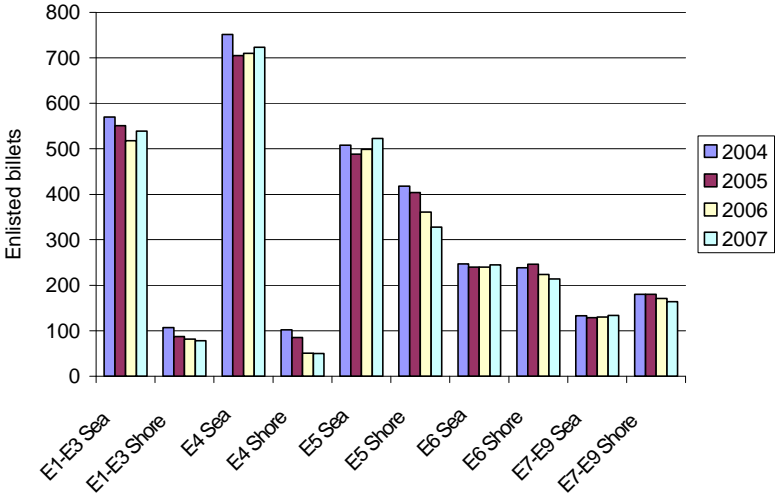
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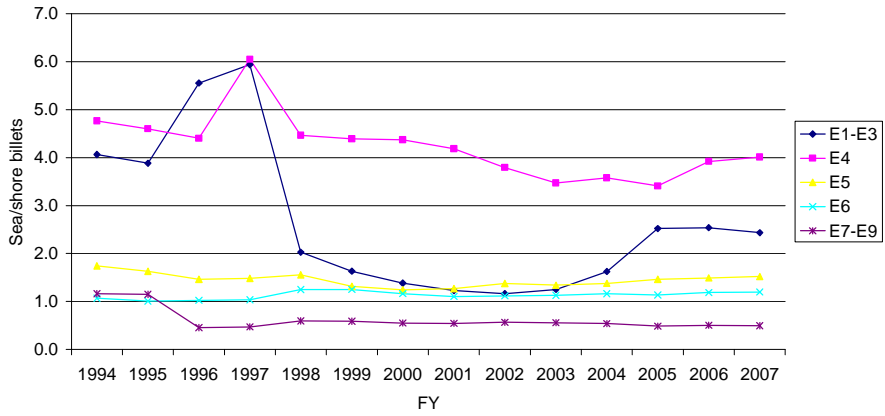
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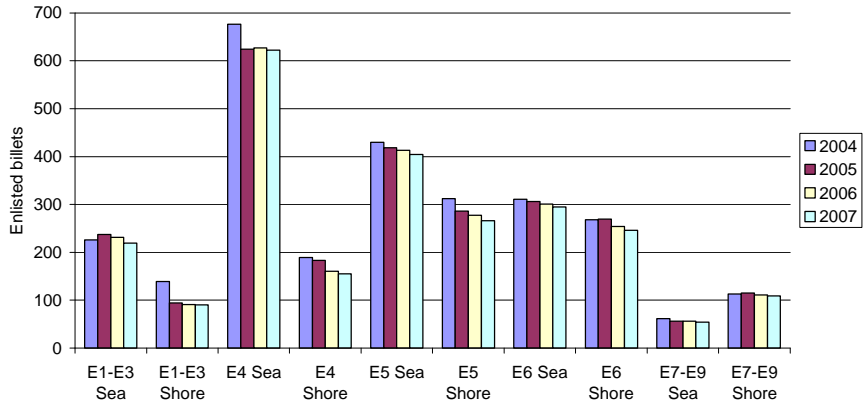
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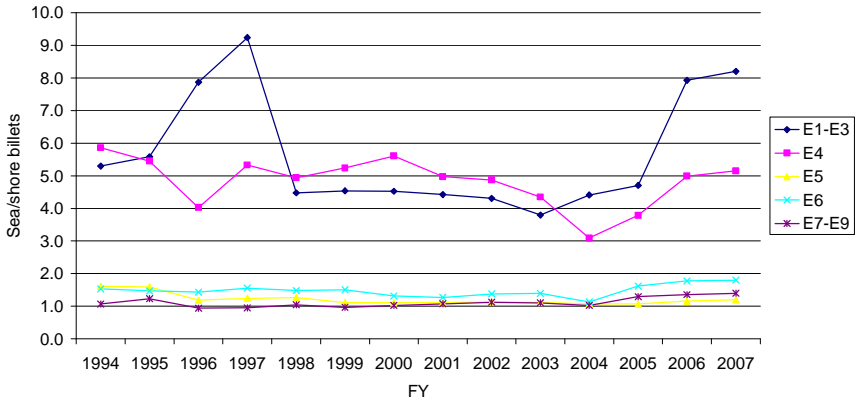
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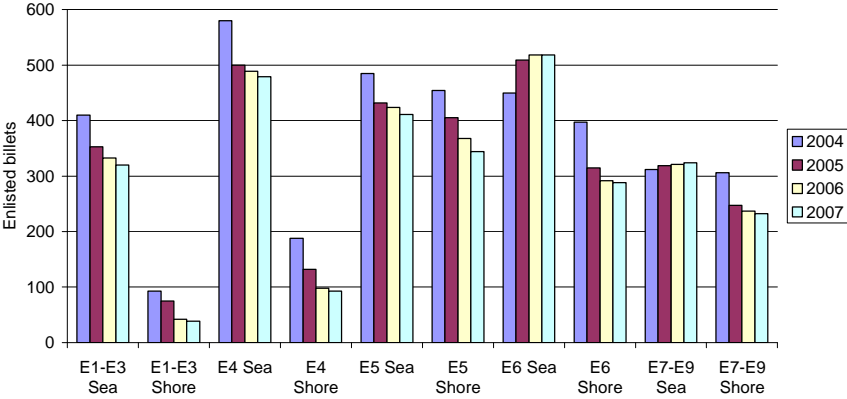
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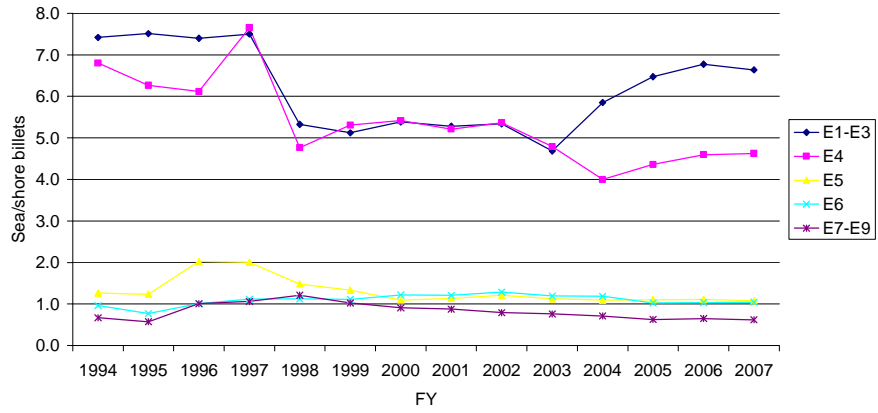
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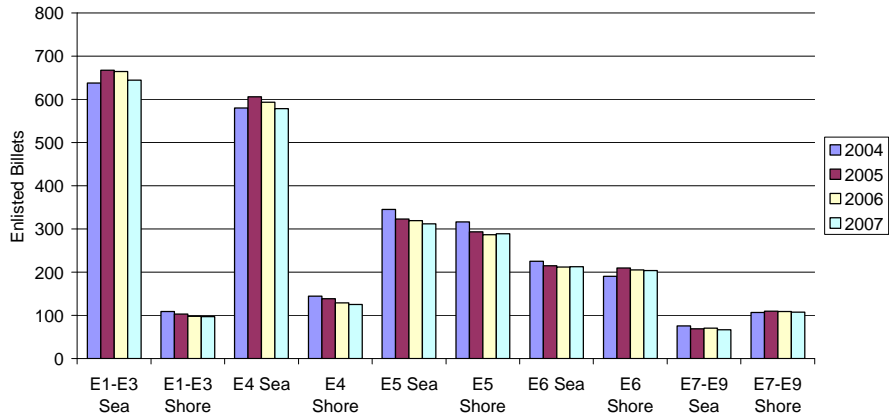
QM sea and shore billets



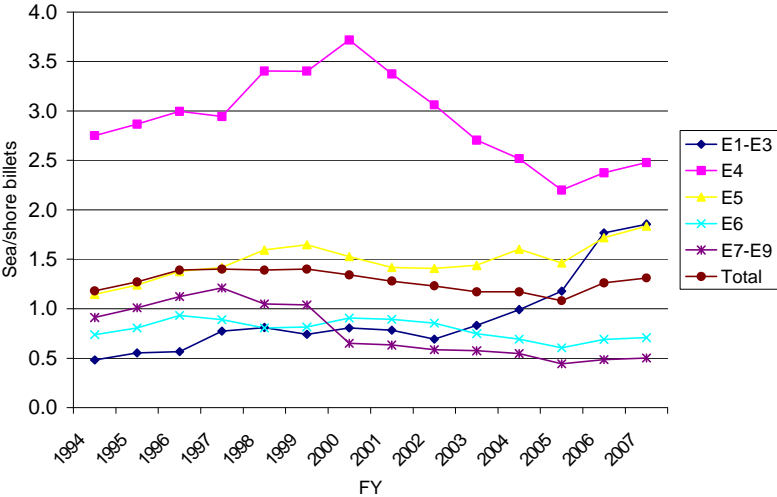
SH sea/shore ratios



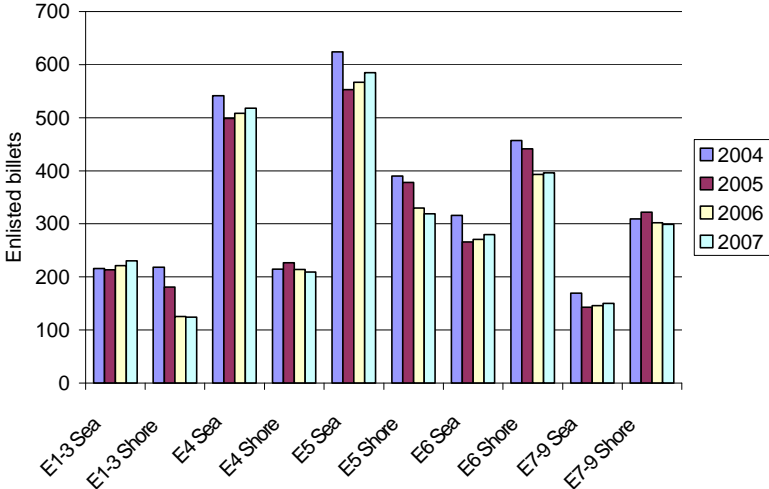
SH sea and shore billets



STG sea/shore ratios



STG sea and shore billets



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