Manning Under AIP

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Executive summary

The Navy began offering Assignment Incentive Pay (AIP) for hard-to-fill billets in three geographic locations in June 2003. At that time, N13 asked CNA to analyze various components of the experiment. Reference [1] describes our analysis. In this CNA-initiated project, we analyze different aspects of the experiment that are now possible because it is no longer in its initial stages. In particular, sufficient time has elapsed for Sailors who were initially assigned under AIP to roll to their new assignments, as well as to make retention decisions.

In the first requisition cycle that AIP was offered, there were 222 jobs, with 100 applications. Through the 3 March 2006 cycle, 7,503 jobs have been filled—just 5 percent of these filled with Sailors involuntarily assigned. The application rate per job posted has increased appreciably since AIP first began, going from .45 application for every job in the first cycle, to 0.69 application up through the most current cycle, representing an increase of about 50 percent in 3 years.

The rationale for AIP was that it would benefit the Navy in two ways: (1) higher retention and lower attrition due to greater volunteerism and (2) a reduction in endstrength from converting Type 3 locations to Type 6 locations. Our earlier analysis of AIP determined that the savings from converting Type 3 to Type 6 billets (the second benefit) amounted to approximately \$2,200 per month, per billet . The average bid of Sailors to date, \$382 per month, has remained well below this break-even estimate.

Our present analysis finds further evidence of the second benefit of AIP—specifically, improved sea manning. This was made possible by a sizable decrease in the number of sea duty billets available to Sailors applying for sea duty jobs, at the same time that the supply of Sailors available to fill those jobs remained fairly constant. Hence, overall sea duty manning improved, with benefits accruing to the Navy in a number of ways, some of which are captured with the break-even estimate of \$2,200 per job per month. Using this estimate and the average bid to date, we calculate a potential savings of over \$114 million each year in the conversion of Type 3 billets alone.

The loss of Type 3 billets, however, means that Sailors rotating to sea duty have fewer options than before AIP, due to the near elimination of the only type of sea duty that does not require Sailors to deploy for long periods of time. We found that the *relative* retention of single parents rolling to sea duty in both Zone A and Zone B, compared with the retention of all other Sailors rolling to sea duty in each zone, has decreased slightly since AIP began. In *absolute* terms, however, the retention of all Sailors rolling to sea in Zone A and Zone B decreased sharply in FY04, regardless of gender or single-parent status. We speculate that a number of factors may have contributed to the overall decline in reenlistments, such as Perform To Serve (PTS), and a reduction in the unemployment rate.

AIP also has implications for shore duty. We noted in our analysis that one hypothesized benefit of AIP, an increase in retention resulting from an increase in volunteerism, was impossible for us to assess. Volunteerism, especially in terms of assignments, has previously been unmeasured and has garnered little high-level attention—leaving us with no basis for comparison, either within locations before and after AIP or across AIP locations after AIP began. What we can conclude, however, is that the attrition and retention behavior of Sailors assigned to AIP shore locations, both voluntarily and involuntarily, is similar to that of Sailors assigned at the same time to other shore duty jobs. It is impossible to know how many of these Sailors would have attrited or failed to reenlist had they been assigned to these same AIP locations in the absence of an incentive, especially since they were either already less desirable as Type 6 than other overseas shore jobs (Misawa) or because they became less desirable when they converted from Type 3 to Type 6 (Naples and Sigonella).

It is not surprising that manning did not improve in shore jobs, especially in AIP locations; unlike sea duty jobs, the supply of shore duty jobs increased with AIP without a comparable increase in the supply of Sailors available for these jobs. Exacerbating the shore manning difficulties is the fact that some of the early AIP locations had a large number of IT jobs. Our analysis showed that overall IT manning has decreased considerably since AIP began, and this is especially true for shore duty jobs. Specifically, there were only enough IT Sailors E4 and above in inventory in September 2002 to fill 91 percent of Billets Authorized (BA); their numbers decreased to 87 percent by September 2005. Given these shortages, it appears that the Navy has chosen to man Type 2 and Type 4 sea duty jobs fairly close to 100 percent, while manning shore billets at a much lower level; although CONUS shore duty manning decreased 6 percent since 2002, combined Type 3/6 manning decreased 18 percent. This helps to explain why IT manning in Naples and Sigonella decreased since AIP began, in spite of the incentive, and why the Navy has not chosen to involuntarily assign more IT Sailors to these jobs. In fact, in relative terms, IT manning in Misawa fared well compared with other shore locations.

We found that, while there has been no significant change in the quality of Sailors assigned to AIP locations, in terms of AFQT and "fast promoters"—the latter defined as those promoting to E5 as fast as the first 25 percent to promote to E5 in their rating and accession cohort—there was a slight improvement in both metrics in a control group of Sailors rotating to Type 6 duty in Rota and Atsugi since AIP began. Also relative to our control group, we found an increase in the proportion of male Sailors in Naples/Sigonella and a decrease in the proportion of Asian/Pacific Islanders in Misawa. Finally, both of our AIP location groups (Naples/Sigonella combined, and Misawa separately) as well as the Rota/Atsugi control group experienced a decrease in the proportion of Sailors who are married and have children since AIP began, but the AIP locations experienced less of a decrease, suggesting that AIP may have helped reduce the loss of these types of Sailors in these locations.

We found a few other changes in the characteristics of Sailors coming on board after AIP began, but these changes were also found in our control group.

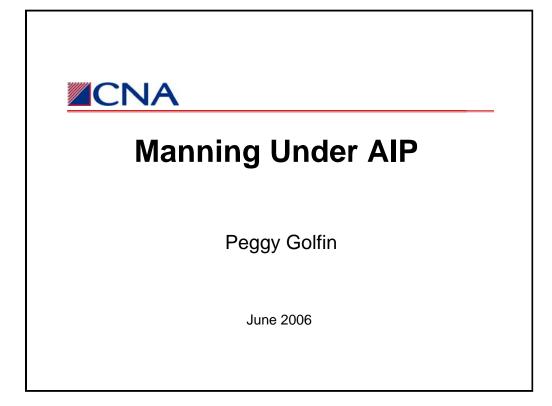
Therefore, we conclude that these changes are not attributable directly to AIP. In particular, we noted that in most of the locations under investigation there has been a general shift toward more Sailors in the E4 and/or E5 paygrades, with fewer E6s. While some of the shift can be explained by relatively small changes in the requirements of billets in these locations, the magnitude of many of these changes is far greater than the change in requirements.

Another finding is a fairly large decrease in the experience of Sailors in the midcareer paygrades (E4 through E6) and an increase in the experience of Sailors in paygrades E7 through E9. Some of the loss of experience in Naples and Sigonella could have been due to the fact that these locations changed sea/shore duty type with AIP, and Sailors within the same paygrade typically roll to sea duty versus shore duty at a different length of service (LOS). Even so, we found this phenomenon in other locations that did not experience a comparable change in duty type, so we pursued this further. We concluded that the loss of experience of midcareer Sailors is largely due to the 452-percent increase in BA for Sailors in the Master-at-Arms (MA) rating since the September 11th terrorist attacks, which has also caused the average experience of mid-career MAs to decrease considerably. In particular, the average LOS of all E4 and E5 MAs has decreased roughly 25 percent since the end of FY02, while the LOS of MAs at higher paygrades remains relatively unchanged.

The increase in the requirements for MAs and the decrease in their length of service throughout the Navy explains only part of the overall loss in experience in the AIP and non-AIP locations we analyzed. While it is beyond the scope of this study to determine what has caused a general decrease in the experience of E6s and an increase in paygrades E7 and above that appear to affect more than just AIP locations, we speculate that phenomena related to the drawdown may be partly responsible.

The loss of experience is one reason why there are fewer married Sailors with children in the OCONUS locations we looked at, but even when we control for this, the loss of these types of Sailors persists, which could have significant implications for day care, schools, housing, and so on, in these overseas locations. We urge the Navy to monitor these manning changes to see if this is a longer term trend.

Finally, the purpose of this research was to look at AIP as currently designed and implemented. We think it is important to note, however, that AIP has a number of features that could help the Navy to achieve its "Strategy for Our People" goals. For instance, because AIP is not an across-the-board incentive for all Sailors, but instead allows Sailors to state the level of incentive they would be willing to accept to take a particular assignment, AIP might be a more cost-effective sea duty incentive or selective reenlistment bonus (SRB). Therefore, we urge the Navy to investigate additional ways in which AIP could be used effectively.

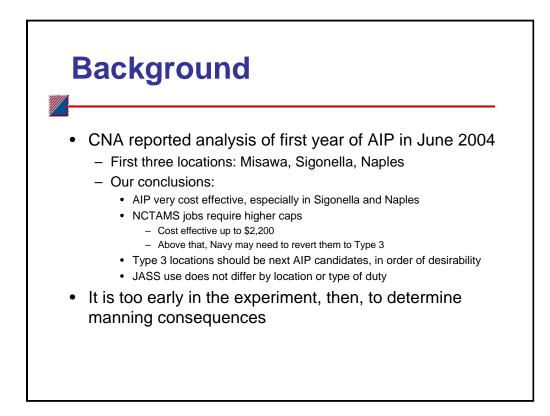


Assignment Incentive Pay (AIP) is additional monthly pay that Sailors receive for being assigned to hard-to-fill billets. Sailors submit a bid for a job that has been designated as AIP-eligible on the Job Advertising and Selection System (JASS). Each job requisition cycle, detailers select the Sailor with the lowest bid from all qualified applicants for each AIP job.

The Navy began offering AIP to three geographic locations in June 2003. Two locations, Naples and Sigonella, included Type 3 sea/shore billets that were converted to Type 6 under AIP.¹ The third, Misawa, included billets that were Type 6 both before and after AIP.

At that time, N13 tasked CNA with analyzing various components of the experiment. Our analysis is described in [1]. In this CNA-initiated project, we analyze different aspects of the experiment that are now possible because it is no longer in its initial stages. In particular, sufficient time has elapsed for Sailors who were initially assigned under AIP to roll to their new assignments, as well as to make retention decisions.

¹For reference, Type 1 jobs are continental United States (CONUS) shore duty, Type 2 jobs are CONUS sea duty, Type 3 jobs are outside CONUS (OCONUS) shore jobs that are given sea duty credit, Type 4 jobs are OCONUS sea duty, and Type 6 jobs are OCONUS shore duty.



AIP was created to help alleviate shortages in hard-to-fill billets. Other incentives existed for this purpose, such as offering points toward promotion, choice of next assignment, and sea duty credit for shore assignments (Type 3 billets). These incentives were found to be inflexible and costly. In particular, Type 3 billets reduce readiness and require a higher endstrength than would be required if those billets were shore duty. Another method to fill these and all other types of billets has been to involuntarily assign Sailors, a practice that negatively affects retention [2, 3].

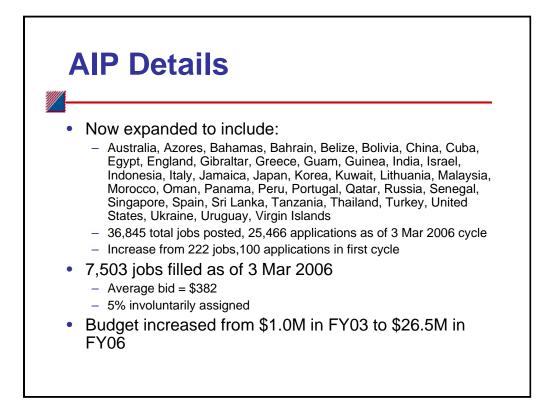
Hence, the rationale for AIP was that it would benefit the Navy in two ways: (1) higher retention and lower attrition due to greater volunteerism and (2) a reduction in endstrength from converting Type 3 locations to Type 6 locations.

Expanding on the methodology developed in [2, 3], our earlier analysis of AIP determined that the savings from converting Type 3 to Type 6 billets (the second benefit from above) amounted to approximately \$2,200 per month, per billet. As long as the average bid in formerly Type 3 locations was below this break-even point, AIP was cost effective. In fact, the average bids for non-NCTAMS¹ jobs in Naples and Sigonella were both well below this level, and we calculated that the benefits from AIP were about 7 times greater than the costs in those locations. While the ratio of benefits to costs for NCTAMS jobs (2.8) was lower, AIP was

¹ NCTAMS stands for Naval Computer and Telecommunications Area Master Station. These AIP jobs, which mostly involve Sailors in the IT rating, have been the most difficult to fill.

still cost effective. However, we noted then that the costs were based on voluntarily assigning Sailors, with something less than a 100-percent fill rate for these jobs. The cost to involuntarily assign Sailors in order to achieve a 100-percent fill rate (or whatever rate the Navy determined was optimal) would most likely be higher. Further, we noted that the retention benefits of AIP in Type 6 locations, and Misawa in particular, were not as easy to calculate because of a lack of any experience with the impact of such an incentive on retention. At that time, however, the average bid for Misawa was generally below \$150 for all ratings, with just 4 exceptions, involving 15 Sailors.

Our other major findings from [1] are summarized in the background slide on page 6.



Since we conducted our original analyses, AIP has expanded to additional locations and to include Type 2 and Type 4 billets. We list the current geographic locations in this slide. Note, however, that not all billets of a particular type are eligible for AIP in each location; AIP may be offered in only certain Unit Identification Codes (UICs) and for selected ratings and paygrades. Appendix A provides a summary of the locations and ratings, and the start date for the location.

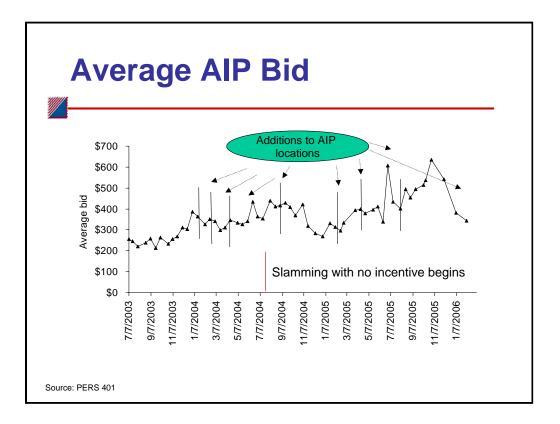
In the first requisition cycle in which AIP was offered, there were 222 jobs, with 100 applications, resulting in 0.45 application for every job posted. Through the 03 March 2006 cycle, there has been 0.69 application for every AIP job, an increase of about 50 percent in 3 years.¹ The increase in the number of eligible jobs has also required additional funding; the budget for AIP has increased from just \$1 million in FY03 to \$26.5 million in FY06 (PERS-401).

As we noted previously, we estimated that the cost-effective break-even point for AIP bids was \$2,200 and that the average bid early on was well below that. That continues to be true. According to PERS-401, the average bid for Naples, Sigonella, and Guam (the other formerly Type 3 duty location selected for AIP so far) through the 18 May 2005 JASS cycle (the last date for which we have

¹ Our statistics are derived from monthly updated AIP reports distributed by PERS-401. Due to Hurricane Katrina, JASS was down for 4 cycles (of the 59 since AIP began). Information pertaining to the number of jobs posted and applications made during that time period are not included in these figures.

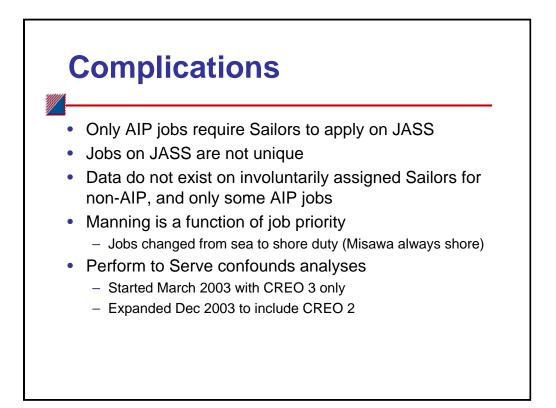
Information) is \$373, \$314, and \$357, respectively. However, these averages include the amount awarded to Sailors who are involuntarily assigned, representing approximately 5 percent of the over 7,500 Sailors assigned under AIP so far. In the early phase of the experiment, Sailors involuntarily assigned to AIP jobs were awarded some AIP incentive. Beginning in July 2004, Sailors who are "slammed" (now referred to as Needs of the Navy Assignments) receive no award. Sailors whose original orders are modified by the Navy to include an AIP assignment (referred to as diverts), receive the 12-month average of the AIP bid rate at the new AIP location, a value that is comparable to that received by Sailors slammed early in the experiment. If Sailors diverted or assigned as Needs of the Navy have higher attrition or lower retention, especially after the policy change in July 2004, the break-even point may not be valid. As we will see later, this may not be an issue, but it is still too early to accurately assess the impact of the July 2004 policy change.

Finally, according to PERS-401, the average bid for jobs in Misawa through 18 May 2005 is \$222.



In this graph, we illustrate the trend in the average bid for all locations since AIP began. We indicate periods in which a significant number of new locations became available, which may have some influence on general changes in bidding behavior. In addition to new locations being available, the Navy has adjusted the caps on jobs numerous times, both upward and downward. These cap changes would also have an impact on overall bidding behavior, although they are too numerous and often affect too few Sailors to illustrate.

In general, it appears that the addition of locations has not had a major impact on bidding behavior, although we note that there has been a fairly steady increase in bids between January and December 2005. In January 2005, a number of locations became available for IT and ET Sailors in Rota, Okinawa, and London with fairly high caps, in the range of \$800 to \$1,000.



Analysis of AIP is complicated by a number of factors. We note the most significant of these in this slide. In particular, only AIP jobs require Sailors to apply on the Jobs Advertising and Selection System; Sailors may negotiate directly with their detailer for other jobs. In addition, the Navy maintains records concerning only involuntary assignments to AIP jobs. As a result, we have information only on applications, selections, and involuntary assignments for AIP jobs and, for these, only since AIP began. This means that we cannot compare phenomena in AIP locations before AIP began, or to non-AIP locations since the experiment began. The only legitimate comparisons are contemporaneous ones across AIP locations, or longitudinal ones within individual AIP locations since AIP began. This is especially problematic in determining one of the benefits of AIP; we cannot measure the effect of volunteerism on retention and attrition since AIP began. We can however, compare attrition and retention behavior of Sailors voluntarily assigned to AIP jobs, involuntarily assigned to AIP jobs, and assigned to other shore duty jobs, without attempting to attribute any differences to AIP itself. We do this later in the brief.

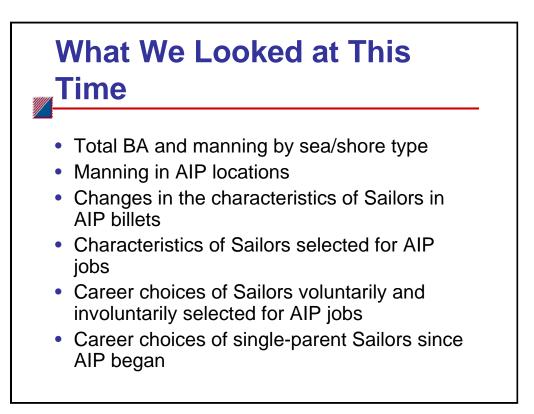
Another complication is the fact that manning is a function of job priority, among numerous other factors. In general, sea duty jobs have a higher priority in being filled than shore duty jobs. Hence, because they were sea duty when they were Type 3 and shore duty when converted to Type 6, those types of AIP jobs have a lower priority in being filled since AIP began. It is not possible for us to determine whether the Navy has chosen to accept some tradeoff between lower manning under AIP in these locations versus a greater rate of volunteerism. If these jobs had been converted in the absence of AIP, their manning

probably would have been reduced. The difficulty is in estimating how much of a reduction would have occurred in the absence of AIP and how much of a reduction, even with AIP, the Navy is willing to accept.

Another significant factor confounding our analysis is the implementation of Perform to Serve (PTS) around the same time as AIP. PTS is a force-shaping tool to level manning and to serve as a quality screen for reenlistments. It began in March 2003 with Sailors in Zone A only, and only in CREO 3 (overmanned) ratings. It was expanded to include CREO 2 (manned at desired levels) ratings in December 2003.

PTS was intended to increase the quality of those reenlisting; therefore, it should have an impact on the quality of Sailors assigned to AIP locations after AIP and PTS were implemented, especially of those in the E4 and, to a lesser extent, E5 paygrades. We will return to this point later, when we look specifically at the question of whether there have been any quality changes in Sailors in AIP locations since AIP began.

Finally, the fact that Operation Iraqi Freedom (OIF) also began in March 2003 most likely affects many of the phenomena under study, such as manning, attrition, and retention. Again, we are not able to isolate these effects from PTS and AIP because of the near simultaneity of all three events/policy changes.



Now that the experiment has been under way for several years, allowing a sufficient number of Sailors who were originally selected to reach their Projected Rotation Date (PRD) or to make a retention decision, we are able to look at different phenomena that were lacking sufficient data in our original research. In our current analysis, unless noted otherwise, we focus on locations originally selected for AIP because they allow the longest period of time to track Sailors. This includes Naples, Sigonella, and Misawa, which necessarily excludes all Type 2 and Type 4 AIP jobs.

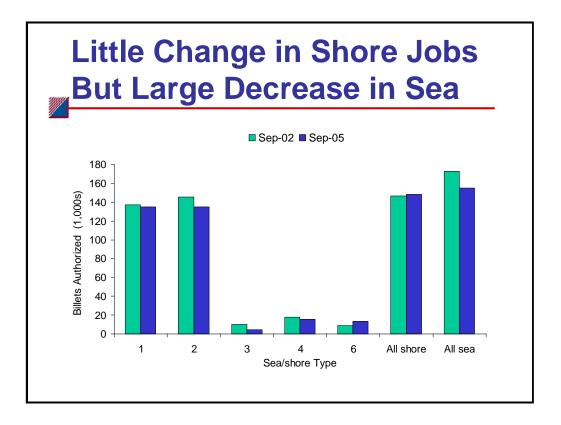
Our analysis includes the following metrics:

1)How has overall manning changed since AIP began? Specifically, we calculate Navy-wide Billets Authorized (BA) using CNA's billet file, and inventory of Sailors, using CNA's extract of the Enlisted Master Record (EMR) for each sea/shore category before and after AIP began. To control for seasonal effects, we look at September 2002 and September 2005 as our before and after AIP time periods, respectively.

2)How has the manning changed in AIP locations selected early in the experiment? Using the same data, we focus on BA versus manning in Naples, Misawa, Sigonella, Lemoore (Type 2), and USS *Frank Cable* and USS *Emory S. Land* (Type 4).

3)Has there been an appreciable difference in the quality, or other characteristics of Sailors in AIP locations? To address this question, we compare a number of characteristics of Sailors in Misawa, Naples, and Sigonella with two other Type 6 locations used as controls in the two time periods defined above.

- 4. What percentage of Sailors selected for AIP jobs ultimately show up at the billet? How many attrite? How many reenlist? Using JASS application data for the period of 21 June 2003 through 8 May 2004, we track Sailors selected for AIP jobs to determine (a) whether they show up in the UIC they were selected for, (b) whether they have attrited, and (c) how many reenlist.
- 5. Have the retention decisions of single-parent Sailors changed since AIP began? We track the retention decisions of all Sailors we identified who would be rolling to sea within 12 months of their decision for the period of July 1994 through June 2005 to see whether single-parent Sailors are less likely to reenlist since June 2003, when AIP first became available.

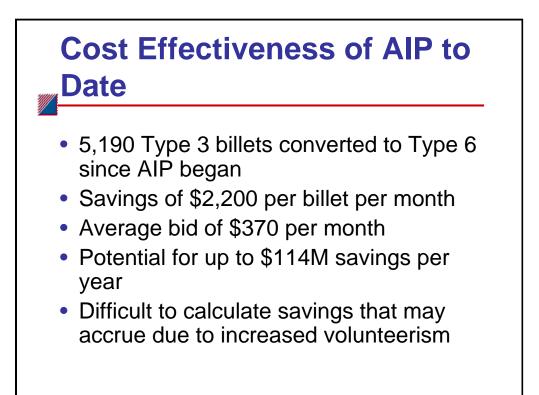


One of the motivations for AIP was to improve manning in hard-to-fill locations, as we noted previously. But AIP also has the potential to improve manning in sea billets because a reduction in their number (i.e., Type 3), all else equal, should provide a larger pool of Sailors to fill Type 2 and Type 4 billets.

The introduction of AIP did not happen in isolation, as we noted previously. These nearly simultaneous events are difficult to control for, so we caveat our analysis with the fact that these other factors may be influencing changes in BA and manning.

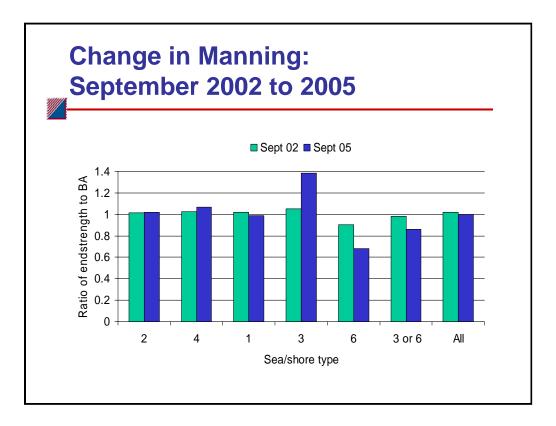
In this slide, we illustrate the change in total BA from September 2002, before AIP began, to September 2005, by sea shore type.¹ Type 3 billets made up a very small percentage of total BA before AIP began; their numbers have more than halved since then, with a comparable increase in Type 6. During this same time period, CONUS sea duty billets also decreased measurably. The net result is a fairly large decrease in total sea billets (10 percent) and an insignificant increase in total shore billets (1 percent) since AIP began.

¹ BA is derived from the Total Force Manpower Management System (TFMMS) database.



Using the estimated savings of \$2,200 per month per billet for the conversion of Type 3 to Type 6 jobs under AIP, combined with the total number of Type 3 BA converted since AIP began, and the average bid in Type 3 billets so far, we estimate the total potential savings to the Navy to be \$114 million per year. This is an approximation because our estimates are based on the Navy being fully manned in the Type 6 billets that were formally Type 3, both before and after AIP, which we will see is not the case. It is also based on an average bid of \$370 per month for these billets, which we noted in a previous slide was the average for Type 3 billets up through May 2005, the last date for which we have data.

It is far more difficult to estimate savings in retention, or other benefits that might accrue with an increased rate of volunteerism, which could accrue for all types of billets offering AIP. We will look at this issue later.



In this slide, we compare changes in manning with the changes in BA since AIP began. Specifically, we calculated the ratio of total inventory in the Navy to BA by sea/shore type in September 2002 and 2005.¹ A ratio of 1 means that the number of Sailors in inventory equals the number of billets authorized for that type of billet. A ratio greater than 1 means that there are more Sailors in inventory than BA; a ratio less than 1 implies that there are fewer in inventory.

While Type 3 jobs were better manned than Type 6 jobs before AIP began (again reflecting the fact that sea duty jobs have higher manning priority), note the significant increase in the manning disparity after AIP began. In large part, this increased imbalance is due to the fact that a billet can change duty type fairly quickly in the billet file, but the change in the type of billet a Sailor is assigned to on the Enlisted Master File does not occur until the incumbent Sailor in the old sea/shore type rotates, which could take several years. To control for this, we also report the ratio of the sum of Type 3 and Type 6 billets, which is a more appropriate metric for the September 2005 period.

The overall ratio of enlisted endstrength to BA has decreased 2 percent since September 2002. In both years, however, there were at least enough Sailors in inventory to fill all available BA; in 2005, the ratio was equal to 1.0. All else equal, we would expect each sea/shore billet type to have a ratio of 1.0 in 2005 (for any category to have a ratio greater than 1—that is, to be "overmanned"—another category(ies) would have to be undermanned).

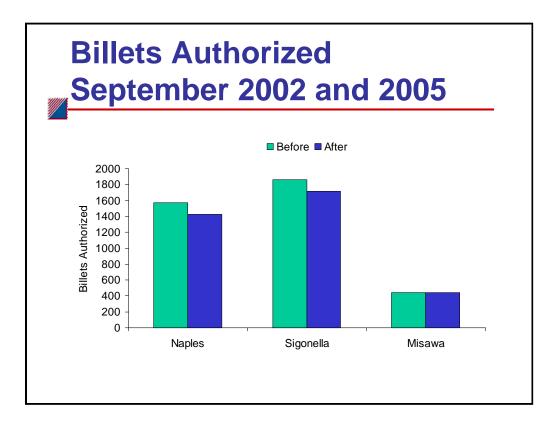
Instead, the ratio for overseas sea duty, Type 4, increased from 1.02 in 2002 to 1.07 in 2005—an increase of 5 percent. In this type of billet, manning, as we define it, was the highest of all sea/shore categories in 2005.

¹ Inventory is taken from the Enlisted Master File.

CONUS sea duty manning, Type 2, has remained the same over the time period; the ratio was greater than 1 both years.

Type 3 and Type 6 billets, however, have experienced the greatest reduction in manning. Before AIP, the ratio of endstrength to BA was 1.05 for Type 3 billets and 0.91 for Type 6. Combined, the ratio is now 0.86. CONUS shore duty, Type 1, has also experienced a decrease in manning since 2002; the ratio went from 1.02 to 0.99, for a 3-percent decrease.

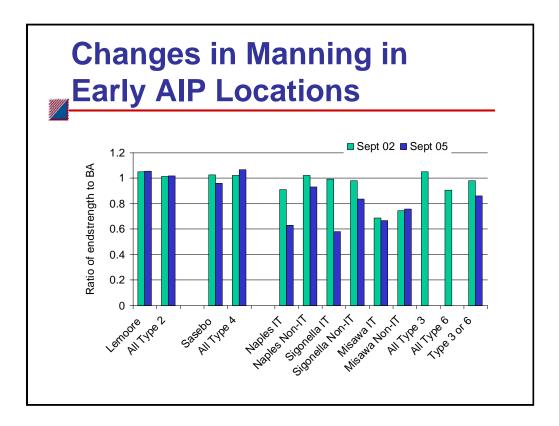
In summary, since AIP began, OCONUS sea duty has experienced an increase in manning, CONUS sea duty has remained constant at a level that is slightly greater than 100 percent, and manning in overseas shore duty has decreased.



In this slide, we identify the changes in BA in Naples, Sigonella, and Misawa since AIP began. We restrict the data to E4 and above, and we eliminate ratings that were not eligible for AIP, including AG, LN, and the CT ratings (except CTT).¹ Further, we include only Type 3 billets in Naples and Sigonella in September 2002, and only Type 6 billets in September 2005. We include only Type 6 billets in Misawa in both time periods.

Only the BA in Misawa has remained constant for the time period under consideration; Naples and Sigonella experienced a 9- and an 8-percent reduction in BA, respectively, since AIP began. A reduction in BA, all else equal, would help to increase the manning in these locations. However, as we have discussed previously, shore billets have a lower priority in terms of being filled than sea duty billets. We look at the ratio of manning to BA in the next slide.

¹Here and elsewhere, we restrict our analysis to E4 paygrades and above, unless noted otherwise. We do so because AIP jobs were restricted to these paygrades in the early phases of the experiment, including those under analysis here. Currently, AIP is available to Sailors in paygrades E3 through E9. In addition, until January 2005, HMs were eligible for AIP.



To allow sufficient time for Sailors assigned under AIP to begin to fill the billets, we selected locations that became eligible for AIP in March 2004 or before and that included a sufficient number of ratings. For each location, we calculated the ratio of Sailors in inventory¹ to BA in September 2002 and September 2005. Again, we excluded ratings that are not eligible for AIP, as well as paygrades E1 through E3.

For each location, we confined our total to the sea/shore type specified by AIP.² We summarize those ratios above and include the overall ratio for the relevant sea/shore type for comparison.

In the absence of AIP, we would expect changes in manning in locations selected for AIP that did not change sea/shore type to be equivalent in sign and magnitude to changes in manning for all billets of that sea/shore duty type. Since AIP was supposed to make undesirable locations more desirable, however, we would expect Type 2 and Type 4 locations to experience an improvement in manning, relative to similar locations. It is more difficult to predict the type of changes in manning we would expect in formerly Type 3 locations because of the change in sea/shore type, and in Type 6 locations because of the decrease in manning these types of locations have recently experienced.

¹Sailors are included in inventory if their assigned rating and paygrade made them eligible for AIP. In other words, Sailors who were E3 on the EMR but were in a billet with an assigned paygrade of E4 were included.

²Lemoore includes all Type 2, Sasebo includes all Type 4, Naples and Sigonella include all Type 3 and Type 6, and Misawa includes all Type 6.

We turn first to Type 2 and Type 4 locations selected for AIP. In the graph on page 20, we show that manning in Type 2 sea duty billets in Lemoore remained constant over the time period, with a ratio of inventory to BA of approximately 1.05. It is not clear why Lemoore was chosen for AIP since manning before AIP not only exceeded BA but was actually 5 percent higher than the overall manning for all Type 2 billets in 2002. It could be the case that full manning was achieved before AIP primarily by involuntarily assigning Sailors, but this would only be known informally since documentation of involuntary assignments is not available.

Unlike Type 4 sea billets overall, manning in Type 4 billets in Sasebo has not increased with AIP. In September 2002, the ratio of inventory to BA in Sasebo was equivalent to the average for all Type 4 billets, a value that was greater than 1. In September 2005, while the average ratio of inventory to BA increased for Type 4 billets, this ratio decreased in Sasebo. According to our metric, Type 4 billets in Sasebo are now undermanned, while the average Type 4 billet is currently slightly overmanned.

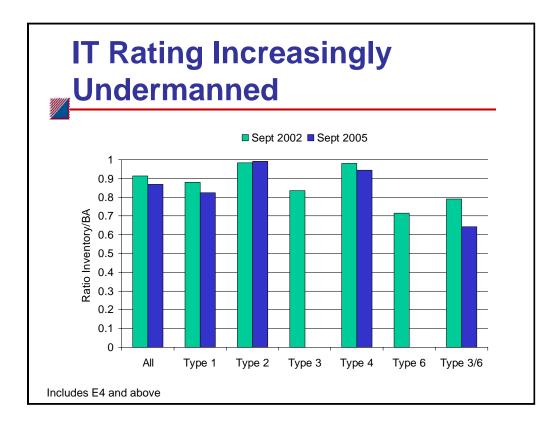
Thus, contrary to expectations, neither Lemoore nor Sasebo—two large AIP locations representing Type 2 and Type 4 billets, respectively—has experienced improved manning since AIP began.

We turn next to the first three locations chosen for AIP. Because of the difficulty in filling IT billets in these locations during the time period under consideration, we differentiate manning by IT versus non-IT billets.

Both the desirability of billets in Naples and Sigonella, from the Sailor's perspective, and the priority of such billets, from the Navy's perspective, decreased when the billets changed from Type 3 to Type 6. On one hand, AIP was intended to offset the decrease in desirability, to some extent. On the other hand, the priority of jobs in Misawa, since they remained Type 6, did not change under AIP. This location may have been difficult to man before AIP, however, as we illustrate in the graph; the ratio of inventory to BA was significantly below the overall average for Type 6 billets in September 2002. AIP could only serve to improve the desirability of the location, with an unambiguous prediction that manning should improve under AIP *if manning in all Type 6 billets remained constant*, which we know it did not.

The biggest change in manning has been in IT billets in Naples and Sigonella, both of which experienced a significant decrease since AIP began. Because the Navy recognized the difficulty of filling IT AIP billets early in the experiment, the cap on many IT billets (especially NCTAMS billets) in these locations was increased soon after the experiment began and has remained at the congressionally set limit of \$1,500 for well over a year. In contrast, IT billets in Misawa, while also capped at \$1,500, have not experienced as significant a decrease in manning as the other two locations. Again, the difference may be due to the fact that Misawa was always a Type 6 billet location, unlike Sigonella and Naples.

Manning in non-IT billets in Naples and Sigonella has also decreased slightly since AIP began, while non-IT manning in Misawa improved somewhat. Again, it is difficult to predict what types of changes we would have expected in Naples and Sigonella because of the change in duty type. In addition, for all three locations, predictions are difficult because of the large overall decrease in Type 3 and Type 6 manning since AIP began.



The difficulty in manning IT shore billets warrants special consideration. Referring to the previous graph, we noted that IT manning in both Naples and Sigonella has decreased significantly since AIP began. This may be explained in part by the change in duty type for these jobs. Yet, since the Navy continues to involuntarily assign Sailors since AIP began, including to AIP locations, why hasn't the Navy increased the manning in these locations with more "Needs of the Navy" assignments?

To address this question, we calculated the ratio of inventory to BA for IT Sailors E4 and above for the same time period considered previously, illustrated above.

The IT rating was undermanned both before and after AIP, but overall IT manning decreased an additional 5 percent since AIP began. Given these shortages, it appears that the Navy has chosen to man Type 2 and Type 4 sea duty jobs fairly close to 100 percent, while manning shore billets at much lower levels. While CONUS shore duty manning decreased 6 percent since 2002, combined Type 3/6 manning decreased 18 percent. This helps to explain why IT manning in Naples and Sigonella decreased since AIP began, in spite of the incentive, and why the Navy has not chosen to involuntarily assign more IT Sailors to these jobs. In fact, in relative terms, IT manning in Misawa fared well compared with other shore locations.

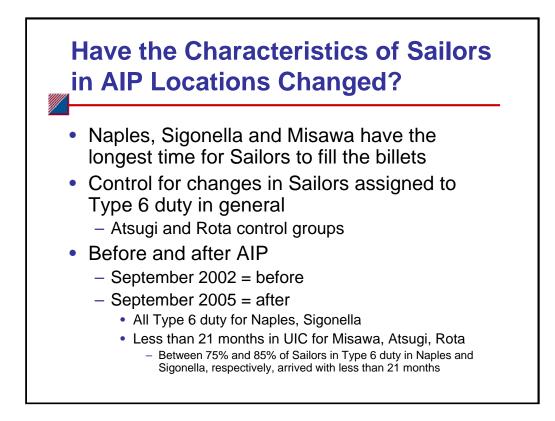
Overall Changes in IT BA Versus Inventory

Paygrade	Change in BA FY02- FY05	Change in inventory FY02-FY05	Inventory/BA FY05	
E4	-11.5%	-20.0%	.68	
E5	-2.0%	-6.8%	.91	
E6	+0.6%	-5.6%	.92	
E7	-1.9%	-2.9%	.93 1.0	
E8	+11.4%	+15.3%		
E9	-17.3%	+6.0%	1.1	

In this slide, we look more closely at the changes in IT manning since FY02. In particular, we address the question of whether manning has decreased since FY02 because BA increased, inventory decreased, or both. We differentiate by paygrade and restrict our analysis to paygrades E4 and above.

The only significant increase in BA since FY02 has been in paygrade E8, but they make up a small fraction of all IT BA in FY05 (293 BA, just 3 percent of total E4-E9 IT BA).

Yet there has been a large decrease, both in relative and absolute terms, in E4 BA; their 11.5-percent decrease represents 282 BA. Their decrease in inventory has also been large, however—larger in fact than the decrease in BA; the 20-percent decrease represents a loss of 367 E4 IT Sailors. It is clear that the greatest manning challenges for this rating are in the E4 paygrade, which also represents the second largest requirements for IT AIP jobs in Sigonella, Naples, and Misawa in the time period under consideration: 28 percent. For reference, the greatest requirements were for E5 (39 percent), and the third largest were E6 (17 percent).



We turn now to our analysis of whether there has been any change in the characteristics of Sailors assigned to AIP locations since AIP began. To do this, we compare a number of characteristics of Sailors on active duty in September 2002 and 2005 in Naples, Sigonella, and Misawa. We assume that Sailors in Type 6 duty in Naples and Sigonella were assigned after AIP, so we restrict our analysis to those in Type 3 duty in September 2002 and Type 6 duty in September 2005. For Misawa, we note that AIP began 30 months before September 2005, and Sailors usually apply for orders about 9 months before their PRD. This would mean that, in September 2005, the first AIP Sailors would have arrived in their new UICs approximately 21 months earlier (30 months minus 9 months). In fact, 85 percent and 75 percent of Sailors in Type 6 duty in Sigonella and Naples, respectively, came on board less than 21 months before September 2005. Hence, for Misawa, we define Sailors as arriving after AIP began as those with less than 21 months in their UICs.

We also selected two similar Type 6 locations for comparison, in order to control for overall changes in the characteristics of Sailors being assigned to Type 6 locations during this time period. In particular, we chose Atsugi, Japan, and Rota, Spain, as our control groups. Since, similar to Misawa, both locations were always Type 6, we also restrict our analysis to those with less than 21 months in their UICs in September 2005.

More specifically, we seek to isolate the effects of AIP on changes in the characteristics of Sailors from the effects of other contemporaneous influences, such as PTS and OIF. This is accomplished by estimating multivariate regressions of the metric of interest, while controlling for relevant factors. We group observations by whether they are (1) from Naples or Sigonella, before or after AIP, (2) from Misawa, before or after AIP, and (3) from Rota or Atsugi, before or after AIP. We combine Naples and Sigonella because, unlike Misawa, both changed duty type. This allows us to test whether the effect is due to AIP more generally, or because of the change in duty type specifically.

We then test to see whether, holding relevant factors constant, the difference in the characteristics of Sailors in each of these AIP/control groups before and after AIP is statistically significant. If the differences are significant across all three groups, we conclude that the change is most likely not a result of AIP.

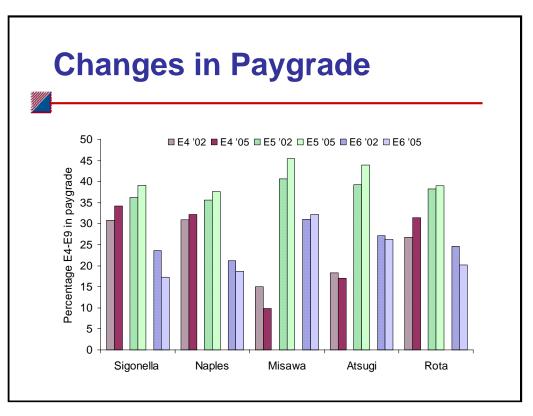
The characteristics we examine include measures of quality (AFOT, the percentage promoted fast to E5,¹ and LOS when they arrived at the billet), race/ethnicity, gender, and marital/dependents status. Note that a number of these variables are interrelated. For instance, AFQT scores are not uniform across race/ethnicity and gender, so a change in the race/ethnicity or gender composition of Sailors since AIP began could have an impact on one or more of our metrics. And changes in the distribution of Sailors across paygrades could also have a number of consequences, including changes in LOS and family status. Therefore, we first have to establish whether there have been any changes in the requirements of billets in these locations since AIP began. This helps to determine whether changes in our metrics of interest are a consequence of changing requirements or of changes in assignment procedures or policies since AIP began. To do this, we first looked at whether there were changes in paygrade requirements (BA) since AIP began. We found that there has been little change in the paygrade distribution of BA in all of the places under investigation except Misawa.² In that location, there has been a fairly large decrease in the proportion of E4 BA since AIP began (26 percent) and a moderate increase in E5 (15 percent). Since these paygrades represent a large percentage of all BA in Misawa (25 percent and 38 percent of the total E4 to E9 BA for E4 and E5, respectively, in September 2002), we would expect to see a slightly higher average LOS, an increase in the proportion of Sailors married and/or with children, and a decrease/increase in the proportion of Sailors in the E4/E5 paygrades, all else equal, since AIP began.

¹We define a Sailor as fast to E5 if he or she was promoted to E5 as fast as or faster than the fastest 25 percent of all Sailors in that rating (separate "ratings" were created for Sailors in the Nuclear Field, Special Warfare, submarine communities, and each NEC within the HM rating) who accessed in the same fiscal year, and who survived as many months as it took the median Sailor to promote to E5 in that rating in 2004. This metric applies only to Sailors E5 and above.

² As a share of total E4-E9 BA, no paygrade experienced more than an 8-percent change since AIP began, in Naples, Sigonella, Atsugi, and Rota, with one exception: the percentage of E7 BA in Rota increased 19 percent. However, E7 BA make up just 8 percent of all BA in Rota in September 2005, so the 19-percent change involves a relatively small percentage of all BA.

It is more difficult to determine whether material changes occurred in the degree of technical requirements of ratings in each location. A significant increase, however, would be associated with an increase in the AFQT of Sailors being assigned, which is one of the metrics we are using to measure changes in quality. Such a change could also affect the gender and race/ethnicity composition of Sailors in these locations since all ratings are not populated equally by both genders and all race/ethnicities. Therefore, we caveat our discussion of these changes with the fact that we cannot determine how much of any change in these metrics since AIP began can be attributed to changes in the technical requirements of ratings in each location.

The percentage of Sailors E5 and above that promoted fast to E5, however, should not be affected by changes in ratings or paygrades of BA in any location because it controls for rating and is independent of the Sailor's current paygrade. Hence, this metric may be more indicative of any real change in the quality of Sailors, E5 and above, being assigned to these locations since AIP began.



Before we present our findings concerning changes in the characteristics of Sailors, we document changes, shown above, in the distribution of Sailors in paygrades E4 through E6 (of all Sailors in paygrades E4 through E9) in September 2002 and 2005.

The changes in Misawa reflect the change in BA we noted previously; the percentage of E4 Sailors decreased 35 percent, while the percentage of E5s increased 12 percent.

In spite of the relatively small change in BA, there have been some fairly large changes in the distribution of Sailors by paygrade in many of these locations. In particular, Sigonella has had a 27-percent decrease in the proportion of E6s, Naples has had a 12-percent decrease in E6s, Atsugi has had a 12-percent increase in E5s, and Rota has had a 17-percent increase in E4s and an 18-percent reduction in E6s. The magnitude of these changes are all greater than the changes we noted in BA. Since both AIP and non-AIP locations appear to have experienced similar shifts, absent a change in BA, we conclude that AIP is not the reason for these large changes in Sigonella and Naples.

	Naples/Sigonella	Misawa	Atsugi/Rota
Avg AFQT	-0.4	-0.4	1.5
Avg months of service	-7.7	0.3	-7.4
% fast to E5	-0.02	-0.04	0.06

Our first metrics, reported above, pertain to quality. We report actual changes in the metric (the value in 2005 minus the value in 2002)¹ and indicate in red those differences, when we control for relevant factors, that are statistically significant at the .05 level.

Our multivariate regressions include controls for a Sailor's gender, race/ethnicity, paygrade, and enlisted management community (EMC) group (aviation, surface warfare, Seabee, and medical). Our results show that the average AFQT and percent promoted fast to E5 have changed very little in both AIP groups, and these changes are not statistically significant when we control for other Sailor characteristics. The control locations, however, did experience a significant increase in the quality of Sailors, even after we control for other Sailor characteristics. In particular, AFQT increased 1.5 points, and the percent promoted fast to E5 increased 6 percentage points since AIP began. Since construction of the latter metric forces it to be constant over time, its increase in the control groups is an indication of an improvement in Atsugi/Rota, vice a lowering of quality in the AIP locations. Further, the increase in AFQT is very small but may be part of the reason for the increase in the proportion promoted fast to E5 in Atsugi and Rota.

On one hand, an increase in the average AFQT and proportion of Sailors promoted fast to E5 in our control group, without a comparable increase in these metrics in either AIP location group, may be an indication that the quality of Sailors being assigned to AIP jobs is not comparable to a general improvement in the quality of Sailors being assigned to Type 6 jobs since AIP began.

¹Changes in percentages are measured as percentage-point differences.

On the other hand, Sailors in all locations except Misawa have less experience since AIP began. It is especially interesting that Misawa is the only location that remained unchanged in this metric since it is the only location to experience a sizable shift in BA toward a more senior workforce. Further, the loss in experience persists when we control for paygrade distribution. In other words, even if the paygrade distribution in Naples/Sigonella and Atsugi/Rota were the same in 2002 and 2005, they still would have experienced a significant reduction in experience after AIP began.

A decrease in the average LOS in Naples and Sigonella, even when we control for paygrade, could be due to the timing of sea/shore rotation and the shift of billets from sea to shore duty. For instance, Sailors in the E4 paygrade typically are on sea duty before their first shore duty tour. Therefore, we would expect E4s to have more time in service when they roll to shore duty than when they roll to sea.

The direction of change in LOS for E5s is usually opposite that of E4s. E5s on sea duty are more likely to be in their second sea tour than their first (exceptions include ratings with fast promotions, such as those in the Nuclear Field, of which there are none in these locations, and those with very long prescribed sea tour (PST) lengths). When the billets changed from Type 3 to Type 6, Sailors at the rank of E5 could fill those billets in their first shore tour, well before their second sea tour. However, the pace of promotions to paygrades E5 and above is too varied and the variance in PSTs is too great to be able to estimate precisely the direction or magnitude of the effect on LOS for any paygrade above E4.

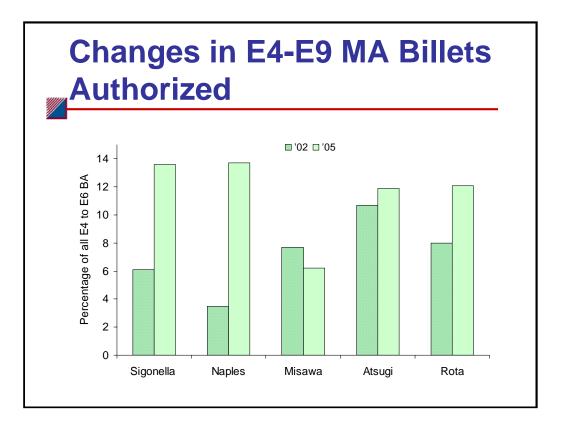
Regardless of much this shift might contribute to the change in LOS in Sigonella and Naples, it does not explain the loss in experience in our control groups. We pursue this in the next few slides.

•			
	Naples/Sigonella	Misawa	Atsugi/Rota
Avg months of service E4	-3.5	-0.8	-4.1
Avg months of service E5	-1.9	-4.9	-2.4
Avg months of service E6	-10.1	-6.8	-9.8
Avg months of service E7+	10.1	19.9	13.0

Given that the impact on time in service caused by changing sea/shore duty type in Naples and Sigonella could differ by paygrade, we examine changes in time in service within each paygrade. Again, we report raw differences and indicate in red those differences that are statistically significant when we control for EMC, race/ethnicity, and gender.

All locations, including Misawa, have experienced fairly large reductions in LOS in paygrades E4 to E6. Because of the smaller sample sizes in Misawa, the changes there are not statistically significant, but they are in the other locations with one exception—E5s in Naples/Sigonella. Conversely, the average experience of Sailors E7 and above has increased substantially in all AIP/control groups (again, Misawa is not statistically significant due to small sample sizes).

It appears, then, that some other phenomena, with perhaps Navy-wide implications, are responsible for this change. While it is beyond the scope of this study to identify each, in the next few slides we describe one that affects Sailors at the E4 and E5 paygrades.



We looked at what might have caused the reduction in LOS in the locations included in our analysis, and we discovered that there was a large increase in the requirements for MAs since September 2002. In fact, throughout the Navy, total BA for MAs increased 452 percent following the terrorist attacks of September 11, 2001. The increase in requirements was disproportionately at the lower paygrades: there were no BA for E1–E3 MAs before FY02 and over 1,400 in September 2005, E4 BA experienced an elevenfold increase, E5 experienced a fivefold increase, and E6 requirements tripled.

Of our locations under investigation, only Misawa failed to experience any increase in MA requirements since September 2002. Of the remaining, Naples experienced the largest increase—286 percent—followed by Sigonella's 124-percent increase, Rota's 51-percent increase, and Atsugi's 11-percent increase.

The large increase in MA BA helps to explain the loss of LOS in two ways. First, because of the rapid increase in requirements for BA, and the fact that there were no MAs at the E1–E3 level, MAs have promoted rapidly to higher paygrades in order to satisfy requirements. For instance, the average LOS for all E4 MAs in the Navy between September 2002 and September 2005 decreased 28 percent, from 53 months to 38 months, and the LOS of E5s decreased 25 percent, from 109 months to 82 months. The LOS of MAs in the higher paygrades either remained fairly constant or decreased no more than 4 percent.

Second, the increase in requirements for MAs was disproportionately for shore duty billets. For instance, in 2002, 58 percent of all E4s in full duty were on sea duty; by 2005, that had dropped to 29 percent. The same general pattern is true for E5s and E6s. This means, for example, that more MAs rolled to shore duty right after A-school in 2005 than in 2002, thereby reducing the LOS of E4 MAs on shore duty in 2005 relative to 2002.

To determine the extent to which the loss in experience and increased requirements of Sailors in the MA rating affected the LOS in our three AIP/control groups, we recalculated the average change in LOS net all MAs, in 2002 and 2005, and also estimated a multivariate regression to see if the difference was statistically significant when we controlled for relevant factors. We found that the change in the average LOS of all Sailors E4 and above after AIP was no longer statistically significant in any of the AIP/control groups. The difference in individual paygrades still persists, however, at paygrades E6 and above. Specifically, E6s in Naples/Sigonella and Atsugi/Rota have less experience while E7s and above have more.

Thus, the large increase in the requirements for MAs does not explain all of the changes in experience since AIP began, for both AIP and non-AIP locations, especially at paygrades E6 and above. Since these statistically significant changes persist in both AIP and non-AIP locations in specific paygrades, however, we speculate that they may be due in part to phenomena related to the drawdown.

Changes in Family, Race/ Ethnicity, and Gender

	Naples/ Sigonella	Misawa	Atsugi/ Rota
% Married/children	-0.06	-0.07	-0.09
% Married/no children	0.01	-0.01	0.03
% Single/children	-0.02	0.01	0
% Single/no children	0.07	0.07	0.07
% Male	0.05	0.01	02
% Caucasian	-0.01	.02	07
% African-American	0	0.07	0
% Hispanic	01	0.02	0.06
% Asian/Pacific Islander (API)	0.01	10	0.01

As we noted previously, a number of our metrics are interrelated. We have seen that the length of service and, therefore, age of Sailors have decreased in paygrades E4 to E6 since AIP began, in both AIP and non-AIP locations. It follows that these changes should also have an impact on the family composition of Sailors on duty after AIP. Given that, we included the length of service of the Sailor when he or she arrived on board as an explanatory variable in our multivariate regressions. With this added control, any significant difference in family status of Sailors that persists is not due to changes in the paygrade distribution or length of service of Sailors.

Since AIP began, there has been a large decrease in the percentage of Sailors with children, especially married Sailors, and the difference persists even when we control for paygrade and length of service (when we control for other factors, we predict a 6.7-percentage-point decrease in the proportion of Sailors who are married with children in Atsugi/Rota, a 5.9-percentage-point decrease in Misawa, and a 3.9-percentage-point decrease in Naples/Sigonella).¹ The tradeoff appears to be fewer married Sailors with children for more single ones without children. This means that either fewer Sailors across the Navy are married with children, holding paygrade and length of service constant, or fewer of these types of Sailors are applying to the AIP and non-AIP locations under study (or being involuntarily assigned to the latter) since AIP began. Since the difference persists for both AIP and non-AIP locations, we conclude that it is not likely that AIP is the reason for the shift. Note, however, that the relative magnitude of the predicted decrease in the proportion of Sailors with children, when we hold other factors constant, is lower in Naples/Sigonella (9 percent) and Misawa (11 percent) than in Atsugi/Rota (14 percent), suggesting perhaps that AIP has somewhat lessened the decrease in these types of Sailors relative to other Type 6 locations.

¹ For reference, 42, 52, and 46 percent of Sailors in Naples/Sigonella, Misawa, and Atsugi/Rota, were married with children before AIP, while 34, 25, and 33 percent, respectively, were single with no children.

Unlike Misawa and Atsugi/Rota, there has been a significant decrease in the percentage of single parents in Naples/Sigonella since AIP began—something that does appear to be a consequence of AIP and, specifically, of the change from Type 3 to Type 6 duty. We will explore this further in a later section. While the decrease is only 2 percentage points, this population made up just 7 percent of all Sailors in these two locations before AIP.

It is not possible to determine the extent to which children accompany their parents on OCONUS tours. Even so, it seems reasonable to assume that these results indicate a significant decline in the number of children accompanying their parents overseas in all of these locations since AIP began, and perhaps other OCONUS locations as well. Although this does not appear to be a consequence of AIP, it is a phenomenon that has significant implications for housing, child care, schooling, and other support systems for Sailors with dependents overseas.

The gender composition of Sailors remains relatively unchanged in Misawa and Atsugi/Rota, but there has been a fairly large and significant increase in the percentage of male Sailors in Naples/Sigonella since AIP began. Even so, men remain underrepresented in Naples/Sigonella (81 percent in 2005 compared with 86 percent Navy-wide). Because this change is unique to Naples/Sigonella, the only locations that changed duty type, it seems reasonable to conclude that it is a consequence of AIP.¹

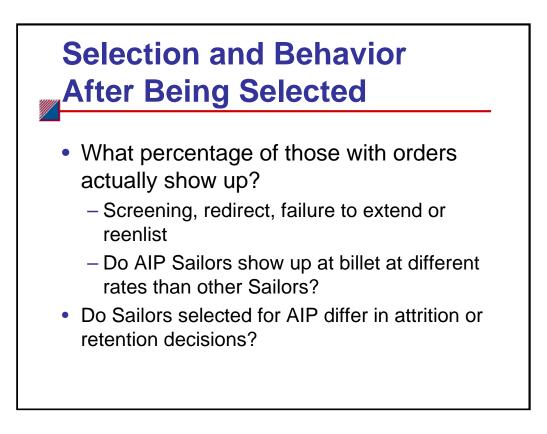
There has been only one significant, and fairly large, change in the racial/ethnic composition of Sailors in any of the AIP locations; the proportion of APIs has decreased 10 percentage points in Misawa. While not significant, when we control for other relevant factors, there has also been a fairly large increase in the proportion of African-Americans. For reference, APIs were overrepresented in Misawa both before and after AIP began; they made up 17 percent after AIP, compared with 7 percent Navy-wide.

The decrease in the relative number of APIs in Misawa could be due to (a) a decrease in its desirability for APIs since AIP began, (b) an increase in its desirability for Sailors in other race/ethnicity categories, or (c) some combination of both.² It is not clear, however, why the racial/ethnic composition of Atsugi/Rota should also change after API, but not in the same racial/ethnic groups.

In summary, the only changes in the characteristics of Sailors coming on board in AIP billets after AIP began that we conclude are a result of AIP are a decrease in the proportion of single parents in Naples/Sigonella, an increase in male Sailors in Naples/Sigonella, and a decrease in APIs in Misawa. Other statistically significant changes have occurred, including a reduction in experience and a shift away from Sailors with spouses and children; however, because these are not unique to AIP locations, we conclude that they are indicative of more general Navy trends since AIP began.

¹ The change in gender is not due to the increase in MA BA since in 2005; 83 percent of all MAs in paygrades E5 and above were male, which is slightly lower than the Navy average of 86 percent.

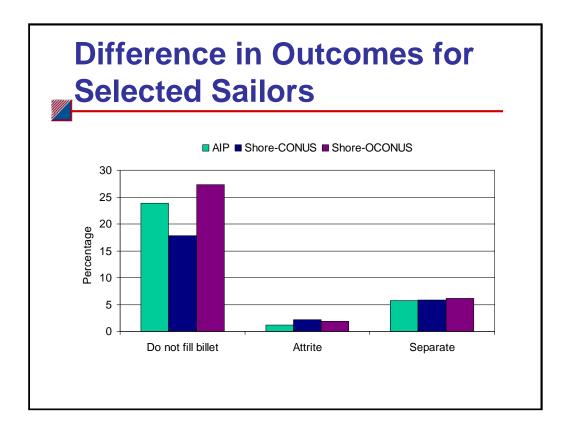
² Another possibility is that detailers were disproportionately slamming API Sailors in Misawa before AIP began, but this is impossible to verify.



Our analysis of characteristics of Sailors before and after AIP was intended to tell us something about changes in AIP locations over time. We turn our attention now to various phenomena of Sailors selected for OCONUS AIP shore jobs in the time period of 21 June 2003 through 8 May 2004.

First, we look to see whether these Sailors show up at their billets. Sailors who are selected for jobs by their detailers may fail to show up for a number of reasons, such as failure to screen for overseas duty, failure to reenlist or extend a sufficient period of time necessary for a job, being diverted by the Navy to another job, attrition, and so on. Other than identifying Sailors who attrite or fail to reenlist, we do not have information on why Sailors don't end up at particular jobs, but it is important to understand whether Sailors selected for AIP tend to ultimately fill the billets at different rates than other Sailors, regardless of the reason. As a consequence, we compare the rate at which they show up at their UICs with the rate at which Sailors chosen for all other shore duty jobs via JASS ultimately show up during the same time period. While this control group is censored (it does not include Sailors who apply on JASS for non-AIP jobs are, like AIP Sailors, volunteers. Therefore, we are comparing the rate at which two groups of volunteers selected for shore jobs ultimately show up at the jobs. Using similar logic, we compare their attrition and retention through September 2005.¹

¹ Our data are from the JASS selection files. Samples include 785 Sailors selected for OCONUS AIP jobs, 594 selected for other OCONUS shore jobs, and 8,995 selected for CONUS shore jobs.

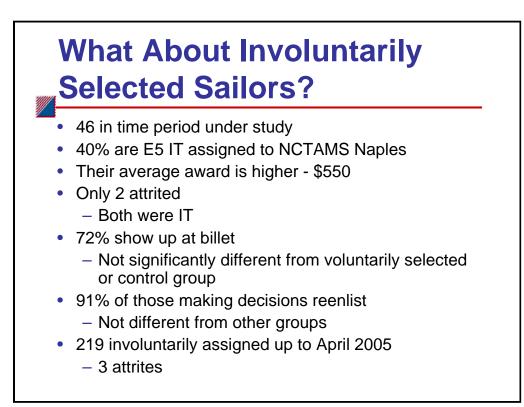


We follow the two groups of Sailors on the EMR through 30 September 2005 to determine the percentages that (1) ultimately fill the billets for which they were selected, (2) have attrited, regardless of whether they fill the billets, and (3) separate from the Navy, regardless of whether they fill the billets, out of all of those who have made any retention decision.

As we can see, the two groups are similar in terms of their attrition and separation behavior (there is no statistically significant difference in any of the categories). A small percentage have attrited since being selected, and, of those who make any retention decision, about 94 percent reenlist or make a long-term extension.

However, there are differences in the rate at which they show up at their billets, with Sailors selected for OCONUS shore jobs similar to those selected for AIP jobs, both of which have a lower rate of showing up than those selected for CONUS shore jobs. (The differences between Sailors selected for AIP versus CONUS, and CONUS versus OCONUS, are statistically different; the difference between those selected for AIP versus OCONUS jobs is not significant.) This suggests that similar factors affect the ability of Sailors to show up at overseas shore billets, regardless of whether they are in AIP locations, such as failure to screen, PCS budget issues, and so on.

While we do not show it in this graph, we also looked to see whether AIP Sailors differ in the rate they show up or attrite by the amount of their AIP bid, and they do not. In particular, the average bid of Sailors who showed up at their billets compared with those who did not is \$347.5 and \$341.3, respectively.



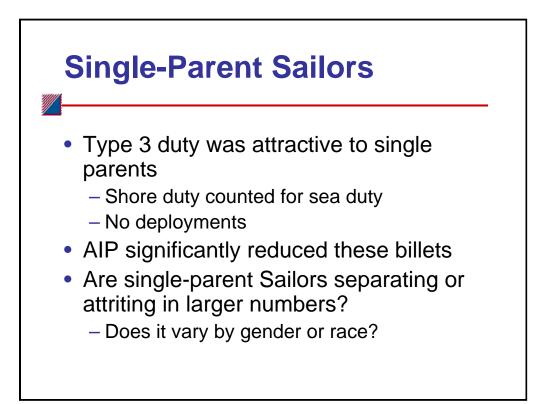
We treat the sample of involuntarily assigned Sailors separately because they are so few in number. Of the 46 involuntarily selected in this time frame, a large percentage were E5 ITs assigned to NCTAMS jobs in Naples. Partly because of this, the average bid for all 46 involuntarily assigned Sailors is higher than the average award for those who volunteered. Recall that, during the time period, all of the Sailors who were involuntarily assigned received some amount of AIP. Further, the types of jobs to which the Sailors were involuntarily assigned had disproportionately higher caps; hence, they were offered higher incentive pay. For instance, 18 of the 48 Sailors involuntarily assigned to AIP jobs in the time period under consideration were assigned to the NCTAMS job in Italy. Each received a \$950 incentive.

Of the 46, only 2 have attrited, both of whom were ITs (one was assigned to a NCTAMS).

These Sailors also show up at their billets in fairly high numbers; 72 percent compared with 76 percent of those voluntarily assigned to AIP jobs. The difference is not statistically different.

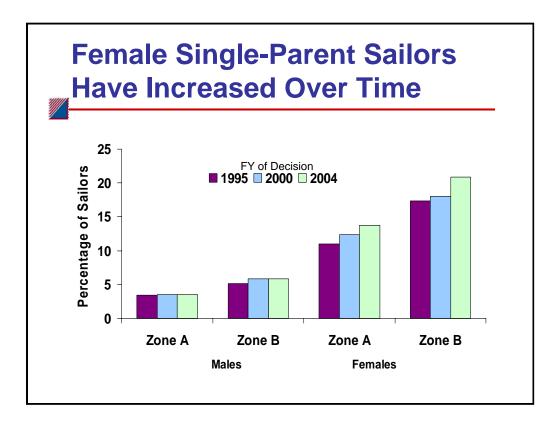
Likewise, the percentage that reenlist is also not statistically different from either of these two groups.

Finally, we tracked all 219 Sailors who have been slammed or diverted up to April 2005. We aren't able to track each one the same length of time, but we note that just 3 have attrited to date.



One concern expressed by Navy personnel in our early work on AIP was whether the significant loss of Type 3 duty jobs would affect the retention of single parents. We are not aware of any previous study of the characteristics of single-parent Sailors or their retention behavior, but Navy personnel with whom we worked in our original research noted that single-parent Sailors traditionally had disproportionately applied for Type 3 duty jobs when it came time to roll to sea because those jobs did not require Sailors to spend extended periods of time deployed at sea. This meant that single-parent Sailors selected for Type 3 jobs had fewer child-related challenges, especially in terms of retaining custody of their children, while on sea duty.

The large decrease in Type 3 jobs means that single-parent Sailors are now much more likely to deploy while on sea duty. We have already concluded that fewer single-parent Sailors are filling formerly Type 3 billets in Naples and Sigonella since AIP began. The hypothesis we explore here is that these Sailors will also disproportionately separate from the Navy as they begin to roll to sea duty and face the decision of losing custody of their children in order to accept deploying sea duty jobs.



Before exploring the question of the retention of single parents after AIP, it is important to understand how many Sailors making reenlistment decisions are single parents. In the graph above, we summarize their prevalence by gender and zone for periods that include time before and after AIP. We include only Sailors who made a reenlistment decision in the stated FY.

We define a single parent as someone who is not married and who has one or more children.We cannot, however, determine which Sailors actually have children living with them.

According to the 2003 NPRST pregnancy and parenthood survey [4], the percentage of parents who are single in the Navy, including enlisted and officers, closely parallels that for civilians; 28 percent of mothers in the Navy are single compared with 24 percent of civilians, while 6 percent of fathers in the Navy are single compared with 7 percent of civilians. Of single-parent Sailors, 39 percent report that they became single parents through divorce, and 55 percent were unmarried at the time the child was born.

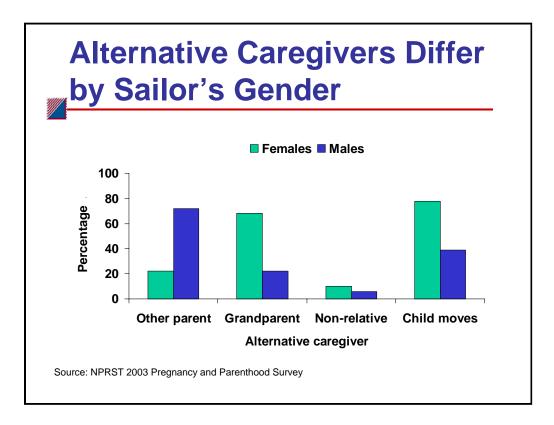
Single-Parent Sailors With Sole or Joint Custody, 2003

Paygrade	Males	Females
E2-E4	3%	8%
E5-E6	4%	16%
E7-E9	4%	20%

As we noted, data pertaining to marital status and number of children do not provide information as to which Sailors have custody. For that information, we turn again to the NPRST survey. According to that survey, challenges presented by being a single parent and serving in the Navy are disproportionately borne by female Sailors; one in five senior enlisted single mothers has sole or joint custody, compared with just 4 out of 100 senior enlisted single fathers. This is an important point because OPNAVINST 1740.4B requires all single parent Sailors or dual-military couples who have custodial responsibility for family members or other dependents to have a Family Care Plan. A Family Care Plan designates one or more caregivers who agree to provide for dependents during deployment, mobilization, temporary duty, and at all other times. According to the policy, these plans should be reviewed annually and upon arrival at a new duty station.

The pregnancy and parenthood survey asked enlisted and officers to indicate whether they had completed Family Care Certificates at their current commands. Seventy-three percent of enlisted single mothers indicated that they had, compared with 52 percent of enlisted single fathers. The main reason cited for not having one was that the Sailor was not told to do so.

NPRST then differentiated these responses by whether the Sailor was on sea or shore duty. For enlisted single mothers, slightly more on sea duty than shore duty (75 versus 72 percent) had completed the form, while far more enlisted single fathers on shore duty than sea duty had done so (59 versus 43 percent).

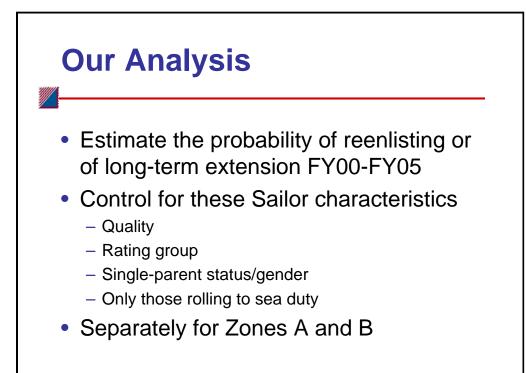


The last two interesting findings of the NPRST study pertain to who is assigned as caregiver and whether children of single parents are required to move when their parents deploy, both of which are summarized in this slide.

Enlisted single mothers are far less likely to assign the other parent as a caregiver than are their single-father counterparts—less than one-quarter versus over 70 percent, respectively. Instead, single mothers assign grandparents almost 70 percent of the time, and one in ten uses other people who are not relatives.

The last stovepipe indicates the percentage of all enlisted single parents, regardless of custody, who indicated that their children must move when the parent goes on deployment. In part reflecting the fact that a higher percentage of single mothers have custody of their children, almost eight out of ten enlisted single mothers must move their children when they deploy, a rate that is double that for enlisted single fathers.

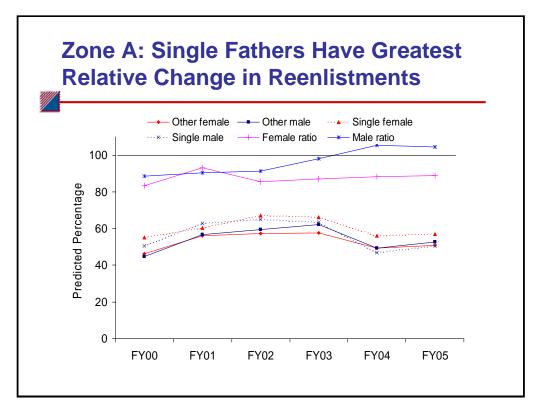
In summary then, the NPRST survey indicates that enlisted single mothers are more likely to have custody, far more likely to turn to grandparents as custodians while they are on deployment, and far more likely to have to uproot their children and move them to be with these custodians when they deploy.



We estimated a logistic regression of the probability of reenlisting or executing a long-term extension using data for FY00 through FY05. We included only those who would be rolling to sea within 12 months of making the decision. This identification is based on whether the Sailor would complete his or her prescribed shore tour, based on rating and paygrade, within 12 months after the end of obligated active duty service (EAOS). We confine our analysis to this group because the majority of AIP jobs involved a conversion of Type 3 sea duty billets to Type 6 shore duty. The hypothesis is that single-parent Sailors, with fewer of the more desirable Type 3 sea duty jobs to choose from, and faced instead with a greater likelihood of having to deploy for extended periods of time on their next sea duty billet, would be less likely to remain in the Navy. For reference, 56 percent of Zone A and 65 percent of Zone B Sailors were rolling to sea within 12 months of their decision.

We estimate Zone A decisions separately from Zone B decisions because we hypothesize that single-parent Sailors make different retention decisions depending on their length of service. In particular, Sailors in Zone A have less to lose if they separate, in terms of retirement benefits, than Sailors in Zone B. They also have fewer dependent children; 15 and 28 percent of single mothers in Zone A and B, respectively, have more than one child.

To control for changes in the characteristics of Sailors during this time period, we included information pertaining to the Sailor's race/ethnicity and quality—that is, whether the Sailor was an A-cell (high school diploma graduate (HSDG) scoring in the upper 50th percentile on the Armed Forces Qualification Test (AFQT)), B-cell (non-HSDG (NHSDG) scoring in the upper 50th percentile on the AFQT), C-cell (HSDG scoring in the 24st through 49th percentile on the AFQT), or D-cell (NHSDG scoring in the 24st through 49th percentile on the AFQT). We also included variables indicating whether the Sailor was in an aviation, medical, special warfare, surface warfare, Seabee, Nuclear Field, or submarine rating/ community at the time of the decision. (For Zone A only, we also included a Gendet category.)

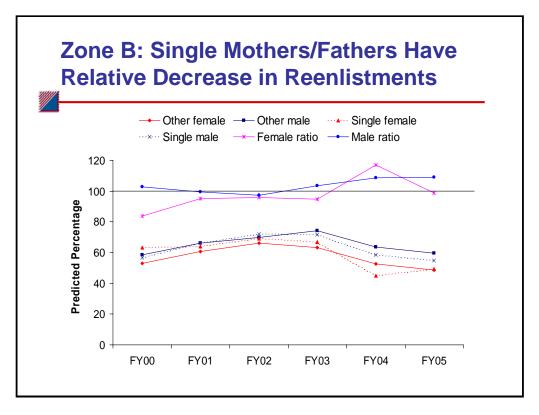


Holding race/ethnicity, quality, and rating group constant, we used our multivariate results to predict the reenlistment rate of Sailors based on gender and single-parent status, for FY00 to FY05, shown above. Yearly fluctuations in predicted reenlistment rates are due to factors that change each year (except for changes in race/ethnicity, quality, and rating groups of Sailors making decisions), including Navy policies or other events (such as AIP, OIF, PTS), as well as civilian opportunities (such as unemployment rates). Since unemployment rates are not a function of single-parent status but more a function of gender (and we already control for race/ethnicity and occupation), if our predicted rates for the two categories of single-parent status, by gender, move in the same direction and with the same general magnitude of change, we conclude that no one Navy policy or phenomenon is affecting one group differentially.

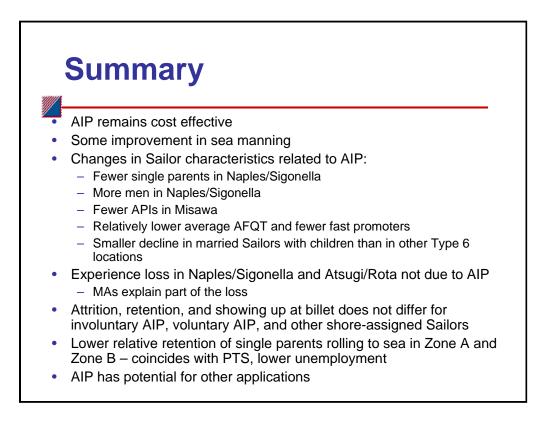
To see whether the direction and magnitudes are fairly constant over time, we also graph the ratio of the predicted reenlistment rate of non-single parents to single parents, by gender. If this ratio has a fairly constant slope over time, we conclude that both types of Sailors, within a gender, are affected fairly equivalently by changing phenomena.

The predicted reenlistment rate of all categories of Sailors rolling to sea in Zone A dropped significantly in FY04 but increased, to varying degrees, in FY05. It appears, then, that one or more phenomena had an effect on all Sailors in Zone A making a reenlistment decision who were rolling to sea. The ratio for female Sailors, however, is fairly steady over the entire time period, increasing just 3.5 percentage points since FY02.

This is not true for male Sailors; the reenlistment rate of non-single fathers exceeded that of single fathers for the first time in FY04 (the first full year after AIP, OIF, and PTS), and it increased 13 percentage points since FY02. We conclude, then, that one or more of these phenomena had a disproportionate impact on the reenlistment decisions of all Zone A single parents rolling to sea disproportionately so for single fathers, but we cannot disentangle the various effects of each.



The reenlistment decisions of all Sailors in Zone B rolling to sea were also negatively affected by one or more events or policy changes in FY04, when we control for Sailor characteristics. Single mothers had the largest relative decrease in reenlistments that year, although the ratio of non-single mothers to single mothers decreased almost the same amount between FY04 and FY05. The ratio for men experienced a far more steady increase, but both ratios were higher in FY05 than in FY02, and the magnitude is similar to that of Zone A Sailors rolling to sea: the female ratio increased 2.8 percentage points since FY02, and the male ratio increased 12 percentage points. Again, we conclude that one or more Navy phenomena have disproportionately affected the reenlistment decisions of single mothers and single fathers rolling to sea in Zone B, and disproportionately so for single fathers. It seems plausible that AIP, PTS, and OIF have each had some impact on the reenlistment decision, or reenlistment option (in the case of PTS), of all Sailors.



We have analyzed a number of phenomena since AIP began, with the major findings summarized above. It remains to put these results into perspective and to discuss AIP in a broader context.

One of the most important outcomes of AIP has been an improvement in sea manning. This was made possible by a sizable decrease in the number of sea duty billets available to Sailors applying for sea duty jobs, at the same time that the supply of Sailors available to fill those jobs remained fairly constant. Hence, overall sea duty manning improved, with benefits accruing to the Navy in a number of ways. We captured some of those benefits with the \$2,200 estimate we noted previously. Using this estimate, we calculate a potential savings of over \$114 million each year in the conversion of Type 3 billets alone.

The loss of Type 3 billets, however, means that Sailors rotating to sea duty have fewer options than before AIP since the only type of sea duty that does not require Sailors to deploy for long periods of time is almost eliminated. We found that there has been a relative reduction in the reenlistment rates of single parents rolling to sea in both Zone A and Zone B since AIP began, but we cannot disentangle the effect of AIP from other simultaneous events/policies that could also affect reenlistments of these Sailors, such as PTS and a reduction in the unemployment rate.

In the short term, the supply of Sailors available for sea or shore duty is fairly fixed; their numbers are based in large measure on PSTs and PRDs, both of which are difficult to make major adjustments to in a short period of time.¹ In the longer term, however, PSTs

¹Other factors, such as large changes in attrition and reenlistment, can also affect their supply.

may adjust to reflect the new ratio of sea to shore billets.² If that happens, the improved sea manning that resulted from AIP may not persist.

AIP also has implications for shore duty. We noted in our analysis that one hypothesized benefit of AIP, an increase in retention resulting from an increase in volunteerism, was impossible for us to assess. Volunteerism, especially in terms of assignments, has previously been unmeasured and has garnered little high-level attention. We are left, therefore, with no basis for comparison, either within locations before and after AIP or across AIP locations after AIP began. What we can conclude, however, is that the attrition and retention behavior of Sailors assigned to AIP shore locations, both voluntarily and involuntarily, is similar to that of Sailors assigned at the same time to other shore duty jobs. It is impossible to know how many of these Sailors would have attrited or failed to reenlist had they been assigned to these same AIP locations in the absence of an incentive, especially since they were either already less desirable as Type 6 than other overseas shore jobs (Misawa) or became less desirable when they converted from Type 3 to Type 6 (Naples and Sigonella).

Not surprisingly, manning did not improve in shore jobs, especially in AIP locations; unlike sea duty jobs, the supply of shore duty jobs increased with AIP without an accompanying increase in the supply of Sailors available for these jobs. Exacerbating the shore manning difficulties is the fact that some of the early AIP locations had a large number of IT jobs. As we illustrated earlier, overall IT manning has decreased considerably since AIP began.

We discussed a few other unusual aspects of the changes in manning in some of the locations first chosen for AIP, which may yield important lessons for the future. In particular, we found (a) some changes in the race/ethnicity of Sailors in Misawa, but we do not know whether they are due to a change in desirability of these locations by these various groups or they are being selected differentially since AIP began, (b) an increase in the proportion of men assigned to Naples/Sigonella, (c) a reduction in the proportion of single parents in Naples/Sigonella, and (d) no increase in the quality of Sailors, as measured by average AFQT and proportion promoted fast to E5, while the control group did experience an increase in both quality metrics. Other statistically significant changes have occurred, including a reduction in experience and a shift away from Sailors with spouses and children, but, since these are not unique to AIP locations, we conclude that they are indicative of more general Navy trends since AIP began. Even so, the AIP locations experienced a smaller decline in the proportion of married Sailors with children than in our control Type 6 locations, suggesting that AIP may have lessened the loss of these types of Sailors in those locations.

Finally, the purpose of this research was to look at AIP as it has been presently designed and implemented. We think it is important to note, however, that AIP has potential to be beneficial to the Navy in other types of applications. For instance, AIP might be a more

² For reference, in September 2002, the ratio of sea to shore BA was 1.18; in September 2005, it was 1.05.

Cost-effective sea duty incentive, whereby Sailors state the amount of monthly incentive they would be willing to accept in order to extend their time at sea. It may also be useful as a type of selective reenlistment bonus (SRB). For instance, Sailors could bid for the SRB for which they would be willing to reenlist. The Navy would then select qualified Sailors with the lowest bids to reenlist up to the point at which the desired retention goal has been met. In that way, the Navy would pay each Sailor according to the amount for which he or she would be willing to reenlist, which sometimes would be \$0, rather than the current practice of paying everyone in the same zone and rating (or NEC) the same amount, including those who would have reenlisted with no incentive. When reenlistment rates are already high, SRBs are a very costly method of obtaining slight increases in reenlistments [5].

More generally, according to [6], AIP has a number of features that could help the Navy to achieve its "Strategy for Our People" goals of recruiting the proper number of high-quality people, retaining the proper number of high-performing personnel, inspiring the attainment of the highest standard of performance, rewarding exceptional performance, and assigning the best people, while also addressing the Navy's compensation guiding principles of ensuring an all-volunteer force, that the compensation be flexible and responsive, and that it be of strategic best value.

Appendix A: AIP Locations¹

Country Location	Specific Location	Command Title	RATING	AIP Start Date
Alice Spri	Alice Springs		All	6-Jul-05
Australia	Rockingham	PEP	All	6-Jul-05
Azores	Azores	ROICC Azores	All	6-Jul-05
Bahamas	Andros Island	Various	All	12-Jan-06
Bahrain	Bahrain	Various	63 Designated Continuity Billets	17-Oct-05
Belize		MIL Liason Office	All	12-Jan-06
Bolivia		US MILGRP	All	12-Jan-06
China		Attache	All	12-Jan-06
		Detainee OPS DET	All	21-Jun-05
Cuba Guantanan	Guantanamo Bay	Various	All	12-Jan-06
		NFECL GITMO	All	12-Jan-06
E	Martaur	Attache		
Egypt	Various	Various	All	12-Jan-0
	London	NCTAMS Det	IT	6-Apr-04
England	Molesworth, UK	USECOMJAC	IT	11-Jan-0
England St Mawga	St Mawgan	Various –	All	6-Jul-05
	St Mawyan		HM/DT	6-Jul-05
Gibraltar	Gibraltar		All	6-Jul-05
Olbraitai	Obraitai			6-Jul-05
		Various	All	6-Jul-05
Greece Various	Various	Attache	All	12-Jan-0
		EUCOM ODC - Athens		12 0411 00
			All	23-Mar-0
Guam Various		Various	HM/DT	23-Mar-0
		Various	MA/9545	23-Mar-0
			23-Mar-0	
		USS FRANK CABLE REPAIR	STS, MM(SS) Aux, EM, EN, MR, HT	25-Nov-0
			ET	25-Nov-0
			QM	11-Jan-0
Guinea		Attache	All	12-Jan-0
India		Attache	All	12-Jan-0
Israel Various	Various	EUCOM ODC - Israel	All	12-Jan-0
		Attache		
Indonesia Variou	Various	Attache	All	12-Jan-0
		Various		

¹ Source: PERS-401

AIP Locations Continued

Country Location	Specific Location	Command Title	RATING	AIP Start Date
	Various	Various	All	6-Jul-05
	Various	Various (PEP)	All	6-Jul-05
	•	DESRON 60	All	1-Mar-05
	Gaeta	Various	All	12-Jan-06
			STS, EN, MR, MM(SS) Aux, EM, HT, SK	25-Nov-03
LaMaddalena	l aMaddalana	Various	ET(SS) COMM	25-Nov-03
	Lawaudalena	various	SK	25-Nov-03
		All	25-Nov-03	
			All	24-Jun-03
		Various	IT	24-Jun-03
Italy			HM/DT	24-Jun-03
ittery			MA/9545	24-Jun-03
	Naples	NCTAMS, Naples	IT	24-Jun-03
		COMSUBGRU 8	IT	24-Jun-03
		STRIKEORSOUTU	ET	24-Jun-03 24-Jun-03
		STRIKFORSOUTH HQ NATO AFSOUTH	IT IT	24-Jun-03 24-Jun-03
				24-Jun-03 24-Jun-03
			All IT	24-Jun-03 24-Jun-03
		Various	HM/DT	24-Jun-03 24-Jun-03
	Sigonella	-	MA/9545	24-Jun-03
		NCTS Sicily	IT	24-Jun-03
		NCTS S TSCD Sigonella	IT	24-Jun-03
Jamaica		MIL Liason Office	All	12-Jan-06
Varnarea			SK	11-Jan-05
	Iwakuni	MCAS	BM	11-Jan-05
			All	24-Jun-03
		-	IT	24-Jun-03
		Various -	ET	24-Jun-03
			HM/DT	24-Jun-03
	Misawa		MA/9545	24-Jun-03
		TS COMMS Det	IT	24-Jun-03
		CPW 1	IT	24-Jun-03
		NSGA Misawa	NEC 9211	1-Mar-05
	Casaba	SASEBO	All	24-Feb-04
	Sasebo	ATG SASEBO	All	6-Jan-04
		Various	All	6-Jul-05
Japan	Okinawa	CNJF OKINAWA	STG	10-Feb-04
		NAVCOMDET	IT	11-Jan-05
		NAVGOMBET	ET	11-Jan-05
		TSCOMM Det (Kadena)	IŤ	6-Apr-04
		AEGIS TRC Det Yokosuka	All	27-Jul-04
		ATG YOKOSUKA	All	6-Jan-04
		NCTS Far East	IT	6-Apr-04
		CNFJ ORS DET	STG	10-Feb-04
Yokosuka	Vakasuka	CNJF SURTASS SEA	STG	10-Feb-04
	TOKOSUKA	CV 63 Kitty Hawk	MM ABH	10-Aug-04
			DC, AO, ABE, QM, ABF	11-Jan-05 1-Mar-05
			QM, OS, GM, DK, CS, IS, IC, AG	1-Mar-05
			DC, AO, ABE, FC, ET, EM, AT	1-Mar-05
		BM, MA, IT, AB, ABF, 8300	1-Mar-05	
	Various	Various	All	
h	Val1003			-
				4
	Chinhae	Various	All	
Korea		Various CNFK Pohang	All	12-Jan-06
Korea	Chinhae Pohang			12-Jan-06

AIP Locations Continued

		[[]		AIP Start
Country Location	Specific Location	Command Title	RATING	Date
Kuwait		TAFT Kuwait	All	12-Jan-06
Lithuania		Attache	All	12-Jan-06
Malaysia		Attache	All	12-Jan-06
Morocco		Attache	All	12-Jan-06
Oman		Attache	All	12-Jan-06
Panama		Attache	All	12-Jan-06
		Attache		12-Jan-06
Peru	Various	NAVMEDRSCHCEN DET LIMA	All	
Portugal	Portugal	Various	All	
		Attache	All	
Qatar		Various	All	12-Jan-06
			All	
Russia		Attache	All	12-Jan-06
Senegal		Attache	All	12-Jan-06
Singapore	Singapore	Various	All	6-Jul-05
		NCTAMS ED ROTA	IT	11-Jan-05
Spain	Rota		ET	11-Jan-05
		CMS TRNG ROTA	IT	11-Jan-05
Sri Lanka		Attache	All	12-Jan-06
Tanzania		Attache	All	12-Jan-06
Task Force	Various	CTF 63	All	12-Jan-06
		CTF 68		
Thailand	Various	Attache	All	12-Jan-06
		Various		
Turkey	Various	Attache	All	
		Various	All	40.1 00
	Kodiac, AK	NSWC Det Kodiak	All	12-Jan-06
	Gulfport, MS & Port Hueneme, CA	NMCBs	E9s filling E9 billets (Type 2 Duty)	24-May-05
United States	Lemoore, CA	Various	All	27-Jan-04
San Nie San Cle	San Nicolas Island, CA	Various	All	6-Jul-05 6-Jul-05
	San Clemente Island, CA	Various	All	12-Jan-06
	Miami, FL	DISA SOUTHCOM		
Ukraine		DTRO KIEV UKRAINE	All	12-Jan-06
Uruguay		Attache	All	12-Jan-06
Virgin Islands	St Croix & St Thomas	Various	All	6-Jul-05 6-Jul-05

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[4] Zannette Urieland and Shundra White. *Results of the 2003 Pregnancy and Parenthood Survey*, Aug 2005 (NPRST-AB-05-2)

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