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Senior Enlisted Personnel: Do We Need Another Grade?

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14. ABSTRACT: Are the most senior enlisted service members adequately compensated? Given the varying levels of responsibility assigned to them, is the compensation sufficient to ensure that we retain the talent we require? Because these senior enlisted personnel are more apt to be retirement-eligible, are the best retiring too early? Are there sufficient incentives to induce the most competitive to remain in service? Service members in grade E-9 usually fall into two categories: the technical or duty expert of a certain occupational field; or the senior enlisted advisor to the commanding officer of a given unit, usually a unit with its own organizational colors. In discussing these issues, this paper starts with a short history of noncommissioned officers, concentrating on the most senior grade. Then we will present a current overview of the E-9s in each of the services and describe what we see as the challenges facing the E-9 community today. We will turn then to the current experience distribution of E-9s, promotion timings, and the pattern of retirements. Finally, we will return to the question of incentives for E-9 retention and a proposal for an E-10 grade.

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Introduction[1]

Are the most senior enlisted service members adequately compensated? Given the varying levels of responsibility assigned to them, is the compensation sufficient to ensure that we retain the talent we require? Because these senior enlisted personnel are more apt to be retirement-eligible, are the best retiring too early? Are there sufficient incentives to induce the most competitive to remain in service?

Service members in grade E-9 usually fall into two categories:

- The technical or duty expert of a certain occupational field, or
- The senior enlisted advisor to the commanding officer of a given unit, usually a unit with its own organizational colors.

We'll start with a short history of non-commissioned officers, concentrating on the most senior grade. Then we'll present a current overview of the E-9s in each of the services[2] and describe what we see as the challenges facing the E-9 community today. We'll turn then to the current experience distribution of E-9s, promotion timing, and the pattern of retirements. Finally, we'll return to the question of incentives for E-9 retention and a proposal for an E-10 grade.

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1. The authors gratefully acknowledge the contributions of Michael L. Hansen for reviewing this paper and Robert A. Book for providing the appendix.

2. We lack personnel data from the Coast Guard, so we don't include them in our empirical analyses; however, our discussion of senior enlisted pay includes the Coast Guard because its compensation and grade structure mirror those of the military services.

History

Before 1920, only six enlisted ranks existed—the top rank being E-1. War Department Circular 303 created a new rank of staff sergeant in 1920, but the system we know today did not come about until the Career Compensation Act of 1949 reversed the order of progression, making E-7 the top enlisted rank.[3]

In 1953, the Womble Commission studied the problem of enhancing the status and prestige of the non-commissioned officer (NCO), but the recommendations were not definitive and the Korean War precluded any action. As the Korean War ended, new problems arose, particularly in the Army where several thousand commissioned officers were allowed to stay in the Army as E-7s. A thesis from the Industrial College of the Armed Forces notes that "cheerless commissioned rejects filled every room at the inn" [2].

In 1956, the Secretary of Defense appointed a Defense Advisory Committee on Professional and Technical Compensations with Ralph J. Cordiner as the chair. This committee is often called the Cordiner Commission. In its final report to the Secretary of Defense in May 1957, the commission made several important recommendations that were finalized by Congress in the Military Pay Bill of 1958 [3]. The commission report argued strongly that the current pay scales were based too much on longevity, a problem that was particularly serious at the highest NCO grades. It looked at pay compression among the enlisted ranks, comparing the 1908 pay table with that in effect in 1956. The report noted that the pay of E-1s increased almost 800 percent in that time period, while the E-7 pay increased only 300 percent.

The Military Pay Bill of 1958 addressed the problems identified by the Cordiner Commission report by establishing two new enlisted pay grades, E-8 and E-9. The text of the bill states:

> The purpose of establishing the two new enlisted pay grades E-8 and E-9 [was] to provide for a better delineation of responsibilities in the enlisted structure....The result is that a situation exists wherein E-7s supervise E-7s who supervise

3. This information and that which follows were largely taken from [1].

> other E-7s. The establishment of the pay grades of E-8 and E-9 will make it possible to distinguish properly between the different levels of responsibility and at the same time provide the necessary monetary recognition for the jobs being performed by those who hold the grades.[4]

The law restricted the percentage of E-9s in each service to 1 percent and the total percentage of E-8s and E-9s to 3 percent.[5] Few enlisted today are even aware that the grades of E-8 and E-9 were not introduced until 1958, and no one today can imagine managing the enlisted force without these grades. At the time of their introduction, however, the new grades were controversial, primarily because some felt that they somehow downgraded the importance of the previous top rank of E-7. Each service was able to implement the new ranks as they saw fit. The Army upgraded the rank structure in three phases and allowed the wearing of the older chevrons until 1968.

As we think about the situation today, with E-9s supervising E-9s who supervise other E-9s, we are reminded of what occurred in the 1950s.

Current status

According to FY 1999 data from the Defense Manpower Data Center (DMDC), the distribution of E-9s by service was as follows: 3,010 in the Navy (slightly under 1 percent), 3,205 in the Army (0.8 percent), 2,950 in the Air Force (slightly over 1 percent), and 1,231 in the Marine Corps (0.8 percent). In general, the services have had about 2 percent of their enlisted force in the grade of E-8 and 1 percent in the grade of E-9.

In each of the services, the E-9s who are technical or duty experts within their specific fields have the following titles:

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4. This is cited on p. 307 of [1]. The citation is from PL 85-422, 85th Congress, H.R. 11470, May 20, 1958 (Senate Report No. 1472, April 25, 1958). See [4] for more information on the situation in 1958 and [5] for an excellent history of the enlisted personnel system.

5. In other words, a service could choose to have 0.5 percent E-9s and 2.5 percent E-8s.

- *Army:* Sergeant Major
- *Marine Corps:* Master Gunnery Sergeant
- *Navy:* Master Chief Petty Officer
- *Air Force:* Chief Master Sergeant
- *Coast Guard:* Master Chief Petty Officer.

E-9s who serve as the principal enlisted to the commanders at all levels from battalions through headquarters are known as senior enlisted advisors (SEAs). Each service chief also has an SEA; this person, as the senior enlisted member in that service, receives a permanent increase in compensation. The titles of the senior enlisted member in each service and the titles of SEAs to other appropriate level commanding officers are as follows:

- *Army:* Sergeant Major of the Army
  - — Command Sergeant Major
- *Marine Corps:* Sergeant Major of the Marine Corps
  - — Sergeant Major
- *Navy:* Master Chief Petty Officer of the Navy
  - — Command Master Chief Petty Officer
- *Air Force:* Chief Master Sergeant of the Air Force
  - — Command Chief Master Sergeant
- *Coast Guard:* Master Chief Petty Officer of the Coast Guard
  - — Command Master Chief Petty Officer.

The four military services and the Coast Guard manage their E-9 populations very differently. The management processes of the Army and Marine Corps have a few similarities, and the Navy and Coast Guard have many close similarities, but there are few similarities between the Air Force and the other services. In short, each service has determined a management process that addresses its needs.

Challenges facing the E-9 community

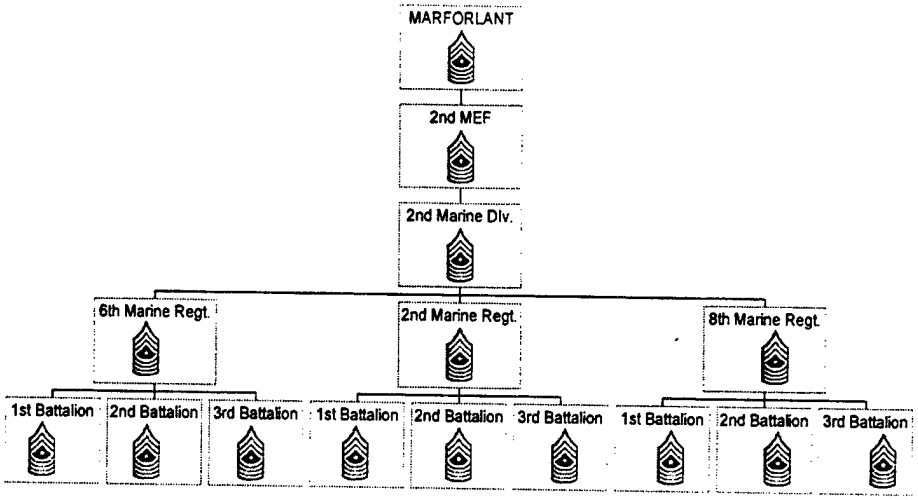
In this paper we examine four challenges that the services must address if we are to continue to retain the most competitive of our enlisted leaders. These challenges are:

- The E-9 grade cannot adequately distinguish among the varying levels of responsibility represented by E-9 billets. This phenomenon is similar to the one addressed in 1958 by the Cordiner Commission. Today we have E-9s supervising E-9s supervising other E-9s.
- E-9 compensation is based on overall years of service. E-9s who are promoted faster than average have fewer years of service when they reach the E-9 grade than do those with slower promotion rates. This creates a pay inversion, with the slower promotees earning more than the faster promotees.
- Years of service at retirement is smallest for those in each occupation who reach E-9 the fastest. While this empirical analysis is for the Navy only, we suspect that the same pattern may be found in the other services. Once the E-9 grade is reached, pay increases consist of only modest awards for longevity.
- Increasing competition from the civilian sector combined with longer overall work lives and higher educational attainment of E-9s suggest that the problems we have identified in retention of our most competitive E-9s can be expected to continue.

We'll address these points in more detail later. In this introduction, let's briefly address the first point: varying levels of supervision.

We'll use the Marine Corps to illustrate this point. Figure 1 shows Marine Forces Atlantic (MARFORLANT). The Lieutenant General who commands MARFORLANT (COMMARFORLANT) has a Force Sergeant Major, shown at the top of figure 1. The Sergeants Major below him report to him as the senior enlisted in MARFORLANT. The 2 MEF Sergeant Major, the SEA for the MEF Commander (a Major General) supervises 91 other Sergeants Major. Figure 1 shows only some of these SEAs—those in the infantry portion of the command.

Figure 1. Sergeants Major (Senior Enlisted Advisors): MARFORLANT (Infantry Portion)

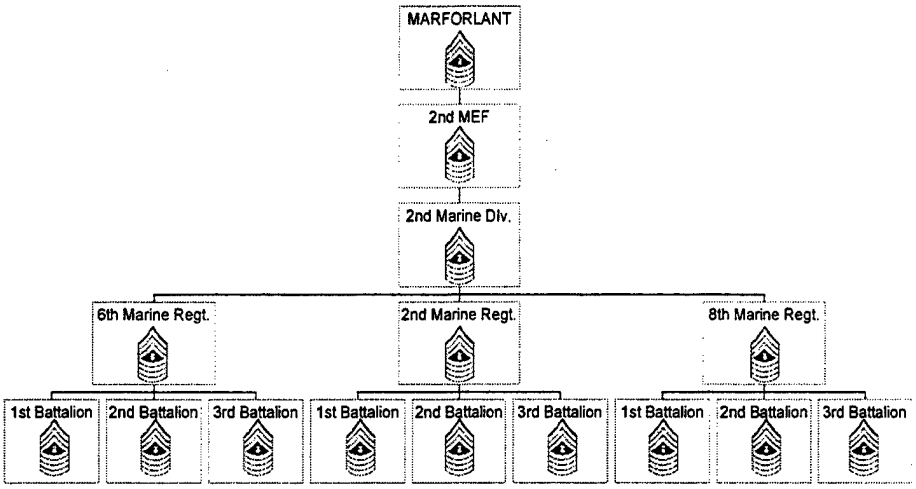


The 2nd Division Commander has an SEA; he directly supervises the Sergeants Major who are SEAs to the three Colonels who command regiments in the 2nd Division. Finally, each of the regiments has three Battalions, each of which is commanded by a Lieutenant Colonel. Each of these Battalions has a Sergeant Major who is the SEA to the Battalion commander. Thus, in MARFORLANT, there are five levels of command, each with an E-9 Sergeant Major serving as SEA to the commander.

The responsibilities of a commanding officer in pay grade O-9 are much greater than those of an O-5. The same case can be made for an SEA serving an O-8. O-8s are also compensated at a much greater level than are O-5s. There is no permanent mechanism, however, to ensure that an SEA serving an O-8 will be paid more than an SEA serving an O-5. In fact, an SEA serving a commanding officer in grade O-5 may draw higher pay than the SEA serving in a billet of greater responsibility because pay for E-9s depends on total years of service, not years of service as an E-9.

The situation is much the same for the technical portion of the E-9 rank, the Master Gunnery Sergeants. Figure 2 shows the five levels in the supervisory chain. Each level has a Master Gunnery Sergeant.

Figure 2. Master Gunnery Sergeants (Infantry Operations Chiefs): MARFORLANT (Infantry Portion)

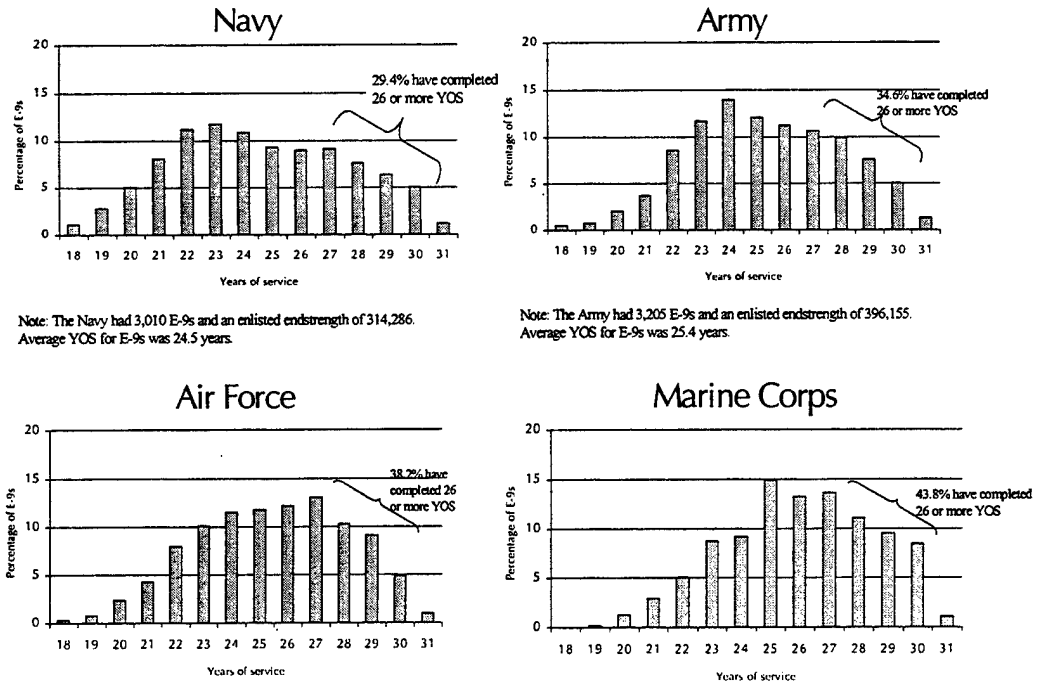


Today's E-9s

Experience distributions

In all our analyses, we show years of service as those serving in that particular year of service. Thus, the 30th year of service means that the person has completed 29 years and is in the 30th year. Figure 3 shows the E-9 experience distribution for each of the services.

Figure 3. Experience distributions for E-9s in 1999[a]



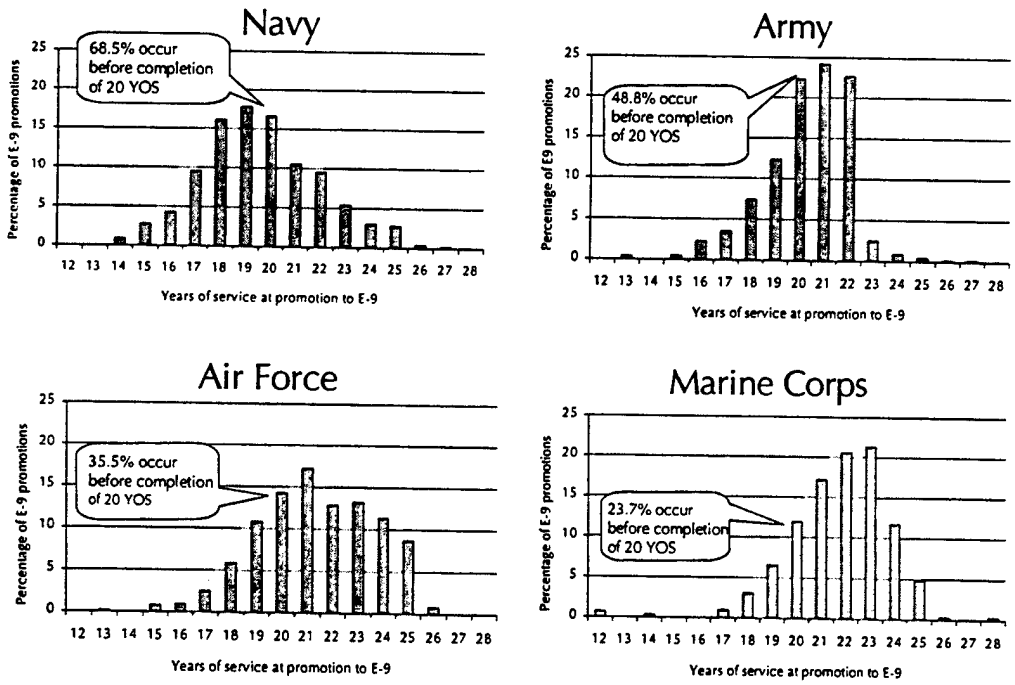
a. All data are from the FY 1999 MPP inventory report from the Defense Manpower Data Center (DMDC) Information Delivery System (IDS).

The Navy has the youngest experience distribution, with modal years of service at 22 to 24 years. Less than 30 percent of Navy Master Chiefs have 26 or more years of service, and just under 35 percent of the Army's Sergeants Major have 26 or more years of completed service. Though the Air Force's Chief Master Sergeants have a slightly higher proportion of the force with 26 or more years of service, the two distributions are quite different: we find modal years of service in the 24th and 27th years for the Army and the Air Force. The Marine Corps has the most experienced force of Sergeants Major; almost 44 percent have completed 26 or more years of service.

Promotions

As figure 4 demonstrates, promotion to E-9 occurred, on average, at 20.0 years of service in the Navy, 21.3 years in the Army, 22.3 years in the Air Force, and 22.6 years in the Marine Corps.[6]

Figure 4. Years of service at promotion to E-9 in 1999 (same source as figure 3)



6. All promotion data in this report are for selections to the grade.

Patterns

More revealing than the averages, however, is the entire pattern of the promotions. Promotions to E-9 occur earliest in the Navy and latest in the Air Force and the Marine Corps.

Comparisons with commissioned officers

As we've seen, the average years of service at promotion to E-9 are between 20 and 22.6 years. Officers with similar lengths of service at promotion are O-6s. However, those advanced to O-6 still have further advancement opportunities. By service, the average years of service at promotion[7] are as follows:

- *Navy:* 20.0 for promotion to E-9; 19.6 to O-6
- *Army:* 21.3 for promotion to E-9; 20.7 to O-6
- *Air Force:* 22.5 for promotion to E-9; 20.6 to O-6
- *Marine Corps:* 22.6 for promotion to E-9; 22.5 to O-6.

In short, with the possible exception of the Air Force, the average military experience levels for promotions to E-9 in each service are virtually identical to those for promotion to O-6. We make the following points about this finding:

- First, the average enlisted person promoted to E-9 receives this last promotion at the same experience point at which officers potentially have four more promotion possibilities.
- Second, the average E-9 promotion occurs almost a decade before the time-in-service limit of 30 years. For the fast-track, early-promoted E-9s, there is more than a decade before service limits are reached—more than a decade without any promotion possibilities.
- Third, the average E-9 is about 4 years younger than the O-6, slightly under 40 at this point in their career. Outside observers might conclude that E-9s, particularly those who reached the grade early, have now found themselves in a dead-end job.

7. These are DMDC data for 1999 selections to E-9 and O-6.

We later try to estimate how the lack of further advancement opportunities affects the retention of our most competitive E-9s, those who fast-tracked to E-7. This is a difficult subject to quantify because (a) quality is difficult to measure and (b) the analyses require extensive longitudinal personnel records. We would suggest, however, that the lack of advancement opportunities is not a retention-enhancer for our best and brightest E-9s.

When do E-9s retire?

Figure 5 shows E-9 separations in FY 1999.[8] Just as the Navy had the earliest promotions to E-9, it also has the earliest retirements. The panels in the figure show the percentages retiring at the service limit, with 30 or more years of service. It's under 30 percent in the Navy and Army, and approaching 40 percent in the Air Force and the Marine Corps. In brief, *the large majority of E-9s retire before the service limit.*

The "bump" in retirement at the 27th year of service is clearly evident. These E-9s, who completed 26 years of service, have just received their last pay raise.[9]

Some thoughts on retirements

E-9s are constrained by law to be no more than 1 percent of enlisted strength. What percentage are they of those who retire from the military? Even among those who complete a full military career of 20 or more years, they represent a very small percentage. In 1999, E-9 retirements made up less than 7 percent of all enlisted retirements.

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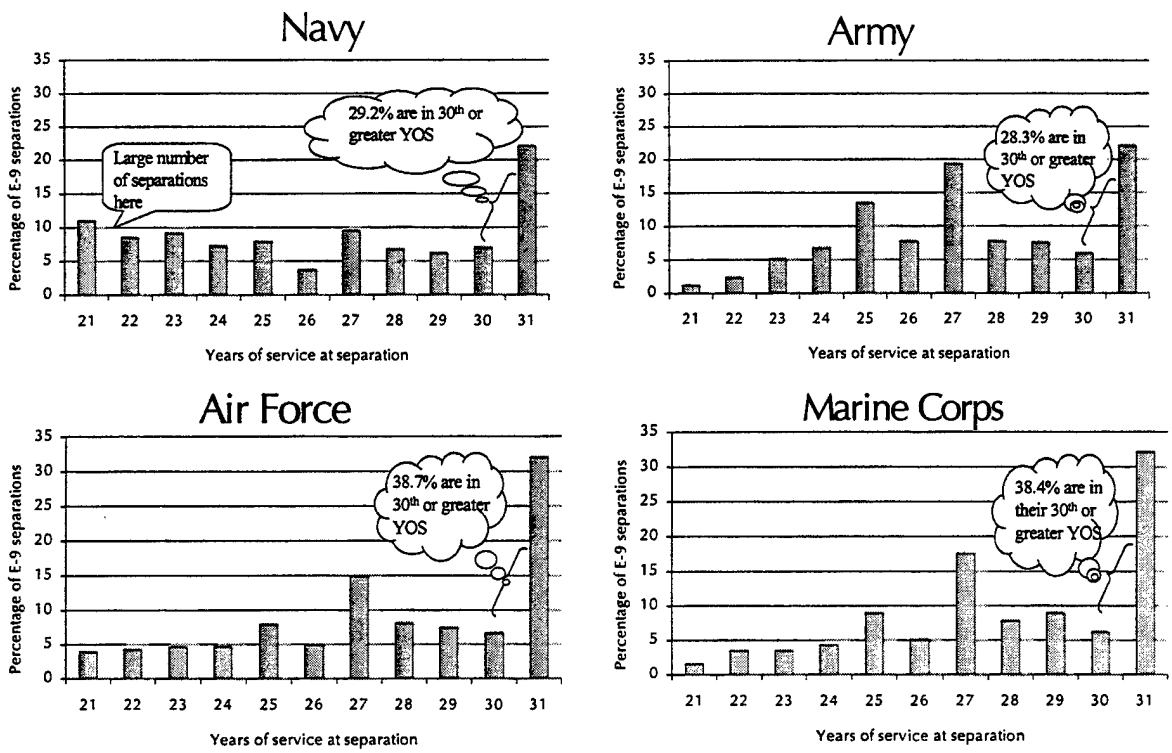
8. The DMDC data from the IDS system that we used for these analyses did not show any E-9 separations before 20 years of service.

9. The retirement system for military personnel who entered before 8 September 1980 based retired pay on the highest basic pay ever received. Service members would often wait to retire until they hit a longevity increase; these increases were after completing 22, 24, or 26 years of service. For those who entered between 8 September 1980 and 31 July 1986, however, retirement pay will be based on the highest 3-year average of basic pay. This is certain to change retirement behavior, and we should not expect to see a spike in retirement numbers at 23, 25, and 27 years of service as these members retire.

Figure 5. E-9 separations (retirements) in FY 1999 (same source as figures 3 and 4)



For some E-5s and most E-6s, the service limits are 20 years. Given that retirement eligibility begins at 20 years, E-5s and E-6s uniformly retire at their retirement eligibility point (after 20 years of service). E-7s, E-8s, and E-9s also reach retirement eligibility at 20 years of service, but service limits allow more years of service. The year-of-service limits vary by service for E-7s and E-8s. In general, E-9s have a 30-year service limit. In 1999 in DMDC data for all the services, there are only 120 E-9s with 30 or more years of service.

It is clear that policy-makers set these service limits by grade as mandatory maximums. What is not clear, however, is what policy-makers wanted the retirement behavior by grade to be. In short, what is the "optimal" percentage to be retired at the service limit? One hundred percent of E-5s and most E-6s retire at the service limit. For DoD as a whole, 33 percent of E-9s retire at the service limit. Is this percentage too high, too low, or about right?

Moreover, there are fairly substantial percentages of E-9s who retire very early, in their 21st to 24th years of service. In FY99 these were:

- 36.0 percent in the Navy
- 15.7 percent in the Army
- 17.7 percent in the Air Force
- 12.9 percent in the Marine Corps.

Comparisons with commissioned officers: average years of service at retirement

Let's compare average years of service at retirement for E-9s and O-6s:

- *Navy:* 26.2 years for E-9s and for 27.2 for O-6s
- *Army:* 27.3 years for E-9s and for 28.2 for O-6s
- *Air Force:* 27.7 years for E-9s and for 27.8 for O-6s
- *Marine Corps:* 28.0 years for E-9s and for 28.2 for O-6s.

For the O-6s, opportunities for further advancement in rank help the services to retain the most able.[10] There is no such mechanism, however, that works to keep our very best E-9s in service. Enlisted E-9s have no further promotion opportunities. They retire at about the same years of service as the O-6s who have not been selected for flag rank. The last longevity pay raise is after completion of the 26th year, but pay for years of service doesn't equate to pay for performance. There's no way to quantify that the E-9s who serve until they receive the 26th year "fogy" are the highest quality performers.

E-9s are increasingly college graduates

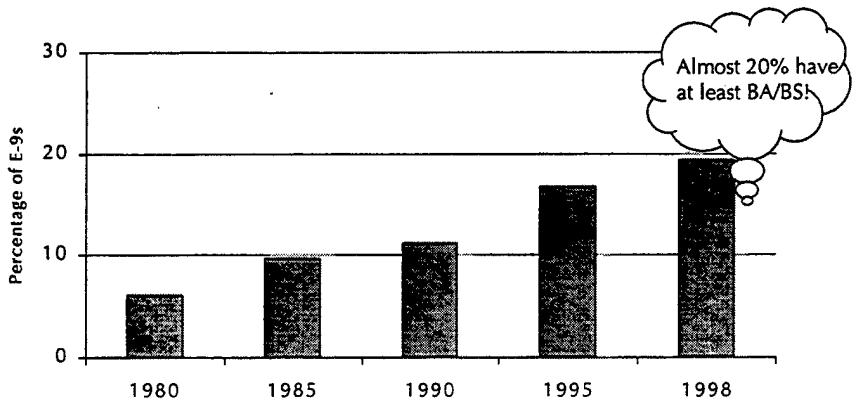
In addition to having ever-increasing layers of responsibility in the E-9 grade, E-9s who continue their service are increasingly college graduates. This makes them increasingly competitive in the civilian labor

10. The appendix summarizes the literature in economics that addresses this problem.

market. These changes in E-9 educational attainment cannot be expected to abate.

DMDC performed some special calculations for CNA with their historical personnel data for all services. Figure 6 shows the proportion of E-9s with Bachelor's degrees in various years from 1980 through 1998.

Figure 6. E-9s are increasingly college graduates[a]



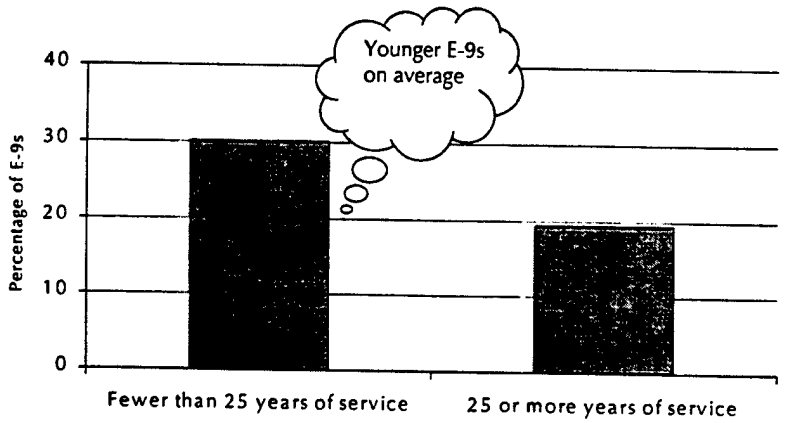
a. Source: DMDC personnel data.

Even though DMDC personnel data suggest that about 20 percent of E-9s had college degrees in 1998, we believe that military personnel data in general probably understate educational attainment when the civilian education is earned after entry into the military.[11] Service members have little incentive to update their records for educational attainment. Thus, we also looked at the education attainment of E-9s using survey data, specifically the 1999 survey of active duty personnel. Here we separated younger E-9s (those with less than 25 years of service) from older E-9s (those with 25 or more years of service). Figure 7 shows the data.

11. The incentives to record additional educational attainment may differ by service.

Other research done for the QRMC has established the importance of educational attainment for civilian earnings. Earnings differences between those with a high school degree and those with a college degree, or even some college, are strikingly large. Moreover, increasing education levels qualify one for a wider variety of jobs. Given that in 1999 slightly over 30 percent of E-9s with fewer than 25 years of experience reported that they had at least a Bachelor's degree, we are in a very different market for our senior enlisted than we were 20 years ago.

Figure 7. E-9s with BA/BS or higher degrees[a]



a. Source: 1999 DMDC survey of active-duty personnel. Overall, 25.6 percent of E-9s reported in the survey that they have at least a BA/BS degree.

In summary, E-9s have increasing educational attainment and better civilian opportunities than they had in the past. These trends can be expected to decrease E-9 retention, particularly for the most competitive. Before we address directly whether we have sufficient incentives for our best E-9s to serve full careers, let's again review the very selective process that makes an E-9.

Is our current compensation and rank structure sufficient to retain our best E-9s?

The promotion process and the 1-percent limit: the quality cut

The enlisted ranks form a pyramid, represented at the top by the pay grade E-9.[12] To make this pyramid work, the services over the years have devised a process of promotion whereby enlisted members compete for advancement to the next higher grade. When coupled with maximum service limits per grade, those who fail competitive selection must separate or retire. With the exception of promotion to E-2, all other promotions are merit based; also, the higher the grade for which one competes, the more difficult the challenge. To be promoted to E-9 means that all the challenges laid down by the service over many years have been met and overcome. We have considerable faith in these promotion processes developed over decades, believing that the promotion processes of each service ensure that only those of the highest quality advance. By the grade of E-9, each member has been through a series of boards and examinations and has been thoroughly vetted by the service.

Reasons to continue in service after making E-9

Very few service members ever make it to E-9. Although the services have different experience mixes—the Marine Corps the most junior and the Air Force the most senior overall—they do not differ in the probability that an E-1 will make it to the E-9 grade. For the 1 percent of the force that will be promoted to that rank, the E-9 promotion is based on superior, meritorious performance over a long period of

12. Keep in mind that the uniformed military do not represent the age distribution of America's full-time working population. Although both the enlisted ranks and the officer ranks form a pyramid (both by rank and by age), comparable ages in the civilian population are in the shape of a cylinder, with about the same numbers in each age group (see [6]).

time. In short, each grade cohort competes against itself with the most competitive winning promotion.

All the services offer their members some opportunity to advance through the ranks at accelerated speeds. Often called meritorious promotion, such early advancements signal superior achievements. The rate of advance also depends on demonstrated performance and leadership abilities and, in some cases, on the uniqueness of the skill the member holds throughout his/her career. There's considerable anecdotal evidence to support the fact that many superior E-9s do not serve as long as the services would like or need. Because retiring from the service before mandatory service limits are reached is a voluntary act, one can assume that many of those who do so are not sufficiently satisfied with the current rewards to continue on as an E-9. One can further assume that many of those who are dissatisfied are among the very best and are those whom the services would want most to retain.

Each service promotes, retains, and loses its E-9s at different points in terms of years of service. What the optimums are is not clear; what stands out is that in each service the average difference between selection to E-9 and voluntary retirement is only 6 years, whereas the average difference between selection and mandatory retirement is considerably longer.

The services benefit from having their most qualified and meritorious E-9s continuing to serve until service limits of at least 30 years. Those who fill the most responsible and demanding billets will usually be selected/appointed from the most senior E-9s. Our hypothesis is that the services are losing many of their most capable performers prematurely. Why? We offer the following reasons why we believe E-9s do not have sufficient incentives to continue in service:

- There are no further advancement possibilities
- The only pay increases are small longevity increases at 20, 22, 24, and 26 years of service
- After 26 years of service, there are no further pay increases.[13]

13. The Army, Navy, and Coast Guard do pay a type of Special Duty Assignment Pay to SEAs in certain flag level and other special billets. This service-specific special pay doesn't carry over into increased retirement income and does not translate into any additional status or prestige.

Some empirical evidence from the Navy: "quality" and E-9 retention

At various discussions with our QRMC sponsors, we were asked if we could quantify some of our arguments about E-9 retention. Specifically, could we say anything about "quality" and E-9 retention? Could we develop some kind of proxy for E-9 "quality"?

As our earlier discussion has shown, we place considerable faith in the promotion process for selecting the most highly qualified. Could we proxy quality by the speed of promotion? We decided to try and chose the Navy, as we had detailed Navy personnel, longitudinal data since the late 1970s. Navy promotions are driven by vacancies in the next rank within the particular Navy occupation (rating). Each year there are different numbers of vacancies; thus, our analysis of promotion speed would have to be by rating and year of promotion.

We decided to use the E-7 promotion, and we built a file that sorted—for each fiscal year of promotion and rating—the personnel records by months of service at the promotion. We then defined the quickest third of promotions as "fast," the middle third of promotions as "average," and the bottom third of promotions as "slow." Thus, our proxy for quality is promotion speed, defined for each sailor by the rating and the year of promotion.[14]

After identifying each sailor as a fast, average, or slow promote by their promotion speed to E-7, we followed them, analyzing their behavior after the E-7 promotion. First, we asked, "What percentage of each group separated before reaching the rank of E-9?"[15] We show this in figure 8.

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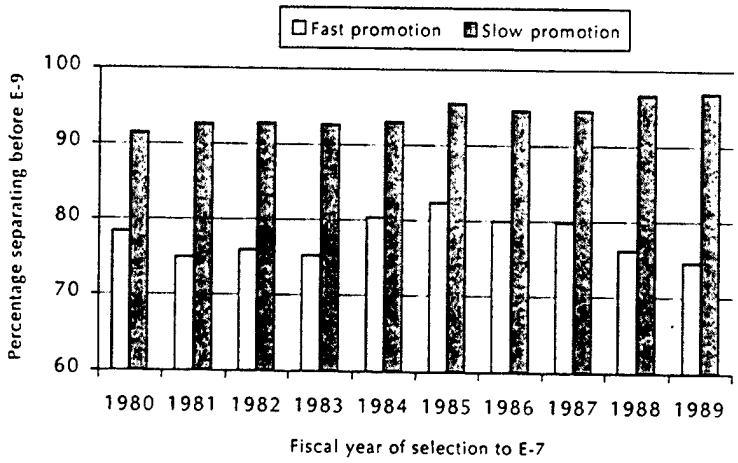
14. If we had not done the analysis by rating, the fast-track group would have been dominated by the ratings with faster promotion rates. These are usually the high-tech ratings where the pull of civilian jobs creates many vacancies and the possibility of faster promotions. Because vacancies determine promotion rates, ratings with faster or slower than average promotion rates can also be caused by changes in personnel requirements.

15. Some will separate because they no longer like the Navy or find the civilian sector more attractive. Some will be forced to separate as they reach high-year tenure. Others will separate at the grade of E-8, never reaching the grade of E-9, and so on.

Figure 8. Fast- and slow-track E-7 sailors: How many separate before reaching E-9?



Note: Fast, average, and slow promoters were calculated separately within Navy rating and year of E-7 promotion.

Figure 8 shows a clear pattern: well over 90 percent of sailors with slow E-7 promotions separate before reaching E-9. In contrast, a considerably smaller promotion of the fast-track sailors separate before reaching E-9. About 25 percent of this fast-track group stay and are promoted to E-9.[16]

Next, we looked at those sailors who were promoted to E-9, still keeping them in our three quality groups. We wanted to know how long it took each group to reach E-9, how long they stayed as E-9s, and what their total length of service was. We show this in figure 9 for those promoted to E-9 in 1985, 1989, and 1992.[17]

16. The average or middle group has separation rates between the fast and slow groups.

17. Why did we stop with E-9 promotions in 1992? The short answer is that we needed to let sailors complete their E-9 service and retire from the service.Even with 1992 promotions, almost 100 sailors are still in the Navy. Thus, the years of service for the 1992 E-9 promotion cohort group will increase somewhat, but not enough to be visible in the figure.

Figure 9. Completed years of service for E-9s: by quality and year selected to E-9

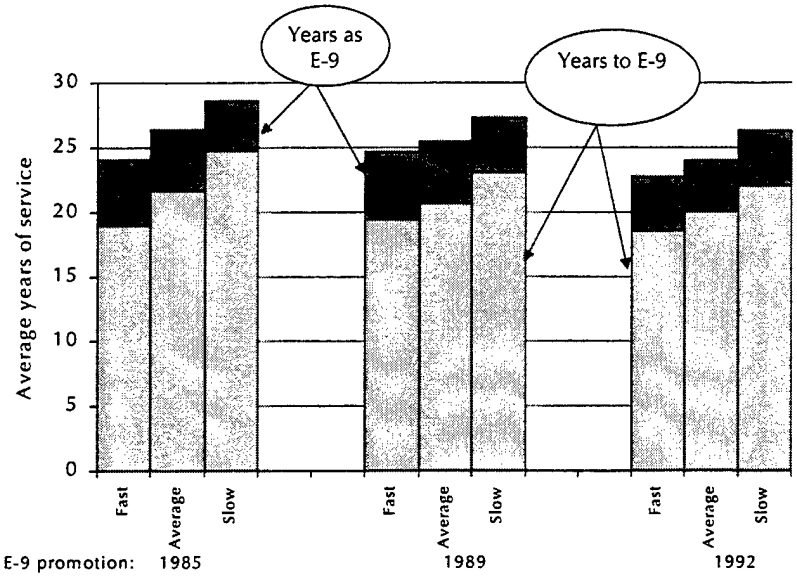


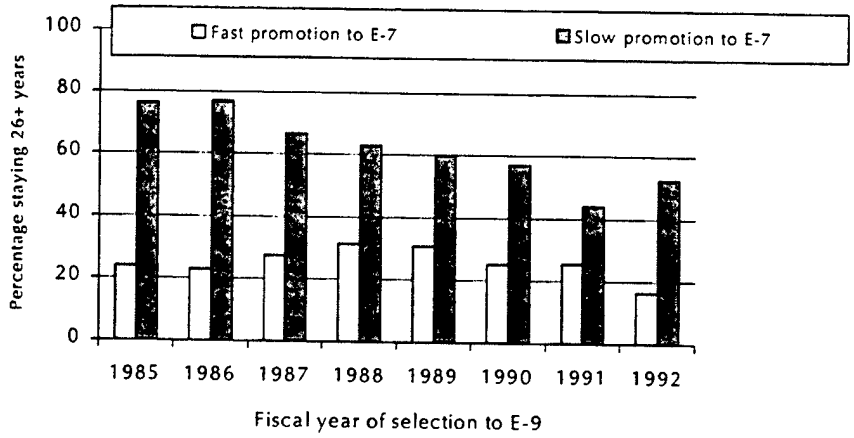
Figure 9 shows that the three quality groups seem to remain as E-9s for about the same period of time, although there has been some shortening of E-9 length of service for the highest quality group (from 58 months for FY85 E-9 promotions to 50 months for FY92 promotions). The big difference in this chart, however, is in the years of service before the E-9 promotion.[18] The Navy Master Chiefs who remain the longest in the Navy are those who are the slowest in their E-7 promotions. For those with fast promotions, the average total Navy service for Master Chief is under 25 years. Though some of our most competitive sailors serve more years than the average, most serve less. Overall, it does not appear that we have sufficient retention incentives for these sailors.

Finally, we looked at the proportion of E-9s that stayed 26 years or longer (26 years is the last longevity increase for E-9s). We show this in figure 10. Only a very small proportion of fast-track E-9s stay 26 or

18. Remember that we identified our quality categories at the E-7 promotion point.

more years; well over 50 percent of the slow promoters stay 26 or more years. (The percentages for those sailors with average promotion rates staying 26 or more years fall between the fast and slow promoters.)

Figure 10. Percentage of E-9s staying 26 or more years



Note: Fast, average, and slow promoters were calculated separately within Navy and year of E-7 promotion.

We think this empirical evidence indicates quite strongly that we do not have sufficient incentives to retain our highest quality E-9s. Combining these findings with the fact that E9s are supervising E9s who are supervising E-9s leads us to propose consideration of an additional grade, E-10. Before going into this discussion in detail, however, let us make a few comments about recent changes in military retirement and the retention of E-9s.

Recent changes in military retirement

Other than seeking out more responsibility by moving to a more senior billet, there are no monetary incentives for an E-9 to serve past 26 years. Although retirement pay will increase by 2.5 percent for each additional year of service up to 30 years, the service member is usually better off financially by retiring at 26 years of service and combining a civilian job with retirement pay. This will be increasingly true for our more educated senior enlisted.

What's more, we believe that recent changes to the retirement system may induce E-9s to leave the service even earlier than they do today. Most enlisted personnel who retire do so as soon as they are eligible—at 20 years of service—but that is not true for E9s, as we have seen from our earlier discussion of E-9 retirement patterns by service. Until very recently, retirement pay was based on some percentage of the member's highest base pay.[19] This induced E-9s to stay for the longevity "bumps" at 22, 24, and 26 months of service.

All service members who entered after 7 September 1980 will be under some form of "high 3" retirement. High-3 retirements will be little affected by these longevity increments. Under the prior system, a member only had to receive the higher pay for 1 month; under High-3, the member will need to receive the pay for 36 months to get the full benefit of the increase. One month's service at a higher longevity pay level will only represent 1/36th of the pay on which the member's retirement is based. In short, longevity increases cannot be expected to "hold" members under High-3 the way they could under the older system.

19. If a member retired at 20 years of service, the retirement pay was 50 percent of the highest base pay. It increased by 2.5 percent of base pay for each additional year of service, peaking at 75 percent of base pay for 30 years of service.

Why we need another rank: recommendation for an E-10 pay grade

Promotion opportunities provide incentives both to work hard and to excel. They also provide a sorting function for large organizations, as the more able, talented, and energetic are pushed to the top.[20] Beth Asch and John Warner's excellent monograph, *A Theory of Military Compensation and Personnel Policy,* stresses the importance of pay rising with rank to provide incentives for retaining talent and ensuring maximum effort. In their conclusions [7, p. 117], they state:

> Those in higher ranks have fewer promotion opportunities left to them—they are already near the top. The grade differentials need to be higher to induce individuals to supply the efficient amount of effort. Higher pay in upper grades increases the likelihood of retaining the most able individuals.

No promotion opportunities exist after the E-9 promotion.[21] Longevity increases are not large: 3.9 percent at 22 years of service, 3.7 percent at 24 years, and 4.6 percent at 26 years. For our most talented, early selections to the E-9 rank, these paltry increases in compensation cannot be what is motivating them to stay in service. We are probably relying on patriotism and a love of service to retain these people. Can we count on that in the future? The Master Chief Petty Officer of the Navy (MCPON) recently expressed concern about the outflow of some of his most capable enlisted into the Warrant Officer or Commissioned Officer programs. Do we have enough of a "prize" in terms

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20. The appendix discusses this theory in more detail.

21. The idea behind REDUX was to induce both officers and enlisted into longer careers, and those arguments made for longer careers still hold. Here we are making a more specific argument: namely, that there is no sorting mechanism to induce the most able E-9s to stay to the current service limits.

of compensation "rank-prestige" to ensure that we retain top people in the enlisted ranks for these critical senior positions?

We would argue that we do not. We will never have an exact measure of personnel quality that would allow us to unambiguously state that we are losing our best personnel too soon. We did, however, get some some information from our detailed analysis of Navy data. We proxied quality by promotion speed, dividing all E-7 promotions into those that were promoted the fastest, the average, and the slowest for their promotion-year group and occupation. We then followed over 100,000 of these E-7s, looking at who left, who got promoted, and at their final lengths of service. Those we identified as fast track earlier in their careers will make up the largest proportion of the E-9 population later in their careers, but they also leave the Navy with the fewest years of service. In short, at least in the Navy, incentives are not sufficient to encourage the fast-track sailors to stay as long as others with slower promotion rates.

The 1999 Survey of Active Duty Personnel also reports that 34 percent of E-9s consider basic pay as the first or the second reason for "staying in" and that another 36 percent of E-9s consider basic pay as the first or second reason for "getting out." We suspect that fast-track individuals compose the largest group of those who think that pay is too low.

Large longevity increases for E-9s, or even another longevity increase at 28 years of service, will work more to make all E-9s stay longer. And there is a real concern that the tenure of all E-9s is too short, as we lose the experience gained over many years. Increasing overall E-9 longevity, however, slows promotions, so that situation will require careful monitoring.

A drawback of longevity increases is that, because they are not targeted, they do little to encourage the best E-9s to stay longer. Our primary concern in this paper is to propose a mechanism that will retain our most competitive E-9s.

The E-10 grade

Current law restricts the E-8/E-9 grades to 3 percent of the enlisted force and the E-9 grade to no more than 1 percent of the enlisted force. We would propose changing the law to the following:

- Restrict the grades of E-8/E-9/E-10 to 3.2 percent of the enlisted force
- Restrict the grade of E-10 to no more than 0.2 percent of the enlisted force
  - This would imply that the maximum number of E-10s would be about 300 in the Marine Corps and about 600 in the Navy, Army, and Air Force.

Just as in current practice, each service would need to determine (up to the 0.2-percent limit) the number of E-10 positions and the allocation of these positions among SEAs and technical personnel. Technical experts are now being appointed to management positions in the private sector. For example, the *New York Times* reports that Microsoft, Cisco Systems, IBM, Sun Microsystems, and Xerox are rewarding their top engineers and scientists with titles and financial rewards similar to those received by vice-presidents in managerial positions [8].

Cost

An appropriate increase in base pay, perhaps 10 percent, would accompany the promotion to E-10. Because the number of E-10s would be small, perhaps slightly over 2,000 individuals, the cost would be small. The payoff would be large.

Summary

In 1958 we added two grades, E-8 and E-9, to the enlisted grade structure. The primary reason was that the levels of responsibility were too varied in the E-7 grade. More than 40 years later, we face the same situation. We identified the following challenges for the E-9 grade:

- The E-9 grade cannot adequately distinguish among the varying levels of responsibility represented by E-9 billets. Today we have E-9s supervising E-9s supervising other E-9s.
- E-9 compensation is based on overall years of service. E-9s who are promoted faster than average have fewer years of service when they reach the E-9 grade than do those with slower promotion rates. This creates a pay inversion, with the slower promotees earning more than the faster promotees.
- Years of service at retirement is smallest for those E-9s who were fast-trackers at the E-7 grade. We identified fast-trackers within each Navy occupation. Thus, this analysis says that in all occupations our most competitive E-9s are retiring the earliest. While this empirical work is for the Navy only, we suspect that the same pattern may be found in the other services. Once the grade of E-9 is reached, pay increases consist of only modest awards for longevity. These small longevity increases provide little retention incentive for our most competitive E-9s.
- Increasing competition from the civilian sector combined with longer overall work lives and higher educational attainment of E-9s suggest that the problems we have identified in retention of our most competitive E-9s can be expected to continue.

We have proposed an E-10 paygrade, with a limit of 0.2 percent of the enlisted force. We believe that this new grade would induce additional years of service out of those senior enlisted who believe they are most competitive for the new grade of E-10. These are, quite simply,

the most motivated and the best performers. We suspect that the very best of the enlisted E-9s would continue to serve, motivated by the tangible prospect of being selected for the new grade. The new grade would offer monetary compensation, recognition, and the opportunity for our strongest senior enlisted personnel to compete for one more level of increasing responsibility. The latter is probably the most important motivator for those who have served their country with a career in the armed forces. In short, on the assumption that the services would promote only their very best to E-10, the strength of the armed forces would be improved and the nation as a whole would benefit from this change. While the benefits of this additional grade would be large, the monetary cost would be very small.

Appendix: Tournament literature in economics[1]

In many civilian occupations, pay is determined primarily by some direct measure of input or productivity, such as hours worked (input) or units of production or dollars of sales (output). In other occupations, however, it is difficult to measure production directly because it may be a function of a combination of the worker's effort/capability and factors beyond the worker's control. In such occupations, particularly those in which only subjective measures of performance and productivity are available, firms reward employees with promotions—increases in both pay and status, awarded to a limited number of "top" employees. With respect to productivity measures and incentives, these occupations more closely resemble the military than those in which direct measures of output are appropriate. Therefore, the reward mechanisms in these occupations can be profitably compared to military.

This practice of using promotions that involve both pay and status has been modeled as a "tournament" in which the top N employees are "winners" (Lazear & Rosen, 1981; Lazear, 1999).[2] Examples of tournament pay in the private sector include promotion of associates to partner in law and accounting firms, "up or out" systems in consulting firms, and the academic tenure system in some universities (i.e., those that promote their own assistant professors rather than hire from other universities).

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1. This appendix was written by Robert A. Book.

2. Edward P. Lazear and Sherwin Rosen, "Rank-Order Tournaments as Optimum Labor Contracts," *The Journal of Political Economy,* Vol. 89, Issue 5 (Oct. 1981): 841-864; Edward P. Lazear, *Personnel Economics: Past Lessons and Future Directions,* Feb. 1999 (National Bureau of Economic Research Working Paper 6957).

The military promotion system for any given rank can be modeled as a tournament. In fact, the whole system can be considered a multi-stage tournament like the model described in Rosen (1986).[3]

One advantage of tournaments over direct-measure compensation systems as a motivator of employees is that tournaments can be implemented when direct performance measures are imprecise but relative comparisons are not too difficult. With no obvious direct measures of performance (such as "number of units manufactured" or "dollars of sales"), it may be extremely difficult to say, for example, "Employee A is performing at level X and therefore should receive a salary of $Y." Yet, it might be easy to rank employees and say, "Employee A is performing better than Employee B; therefore, we will promote Employee A." Tournaments also save the time of managers: with many promotion "slots" (but less than the number of eligible employees), it is often easy to determine the outcome for large numbers of cases because many employees are clearly either superior or inferior. Management then will need to expend significant effort in only a few "borderline" cases.

Employees may also prefer tournaments to direct compensation, particularly if output is partly determined by effects common to all employees in the organization (as opposed to effects related to individual effort). This will certainly be the case if employees are risk-averse and factors beyond the control of employees are significant. All of this applies to our military personnel system and the dominant importance of promotions in the compensation system.

One disadvantage of the tournament system is that the best employees likely have the best outside options, and they might leave the organization if they perceive that their rewards are capped at a lower level than their ability warrants. These problems become even more severe when all promotion opportunities have been exhausted. Once an individual reaches the highest level of an organization, only pride in a job well done motivates the employee, and this may not be sufficient in all cases. (In the civilian sector, this effect may help explain the

3. Sherwin Rosen, "Prizes and Incentives in Elimination Tournaments," *The American Economic Review,* Vol. 76, Issue 4 (Sep. 1986): 701-715.

very high financial rewards—and low tenure-in-job—of corporate CEOs.) At the top stage of a multistage tournament, such as the military promotion system, this problem is particularly severe because it is the very best employees, in the most important positions, who are the most likely to leave.

How many levels, then, should be in the tournament? How does one tell if another competition (another promotion) is needed? The literature does not contain exact answers, but it suggests that the military may not have sufficient levels in the tournament to retain the most talented.

At the time of an E-9 promotion, the fast-trackers in each service will have about 10 years before the 30-year service limit is reached. A decade with no prospect of promotion and only small, automatic longevity increases (which is to say, raises independent of performance), does not seem especially motivating for top performers. Furthermore, the most capable E-9s are not only those most likely to be disappointed by the lack of promotion opportunities, but also those with the best options for employment outside the military. This combination of factors suggests that another tournament—competition for promotion to another grade (E-10)—might significantly improve the retention of the very best E-9s.

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