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THESIS

A COMPARISON OF THE EFFECTIVENESS OF
TRADITIONAL NAVY ENLISTED DETAILING WITH THAT OF
PERMANENT ASSIGNMENTS

by

Ann F. Stencil

December 1986

Thesis Advisor:

David R. Henderson

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A Comparison of the Effectiveness of
Traditional Navy Enlisted Detailing
with that of Permanent Assignments

by

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Lieutenant, United States Navy
B.S., U. S. Naval Academy, 1980

Submitted in partial fulfillment of the
requirements for the degree of

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ABSTRACT

This study examines the idea of reorganizing traditional Navy enlisted detailing, by committing personnel to one homeport and to a permanent assignment on one ship for the extent of their careers. Normal shore rotations would still occur, but the same homeporting would generally be observed for assignments. The results of this study suggest methods by which existing enlisted detailing methods may be modified so that the Navy realizes overall cost savings in areas such as PCS moves, retention, training and administration.

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I. A HOMESTEADING ENVIRONMENT

A. BACKGROUND

Historically, we rotate personnel every three to four years. They are reassigned from sea duty to shore duty, from shore duty to sea duty, from one homeport to another, and so forth. This is done for a number of reasons, such as fleet readiness, global presence, and retention incentives. Each of these concepts is somewhat elusive, and the results of the methods we employ for rotation may not be directly quantifiable in relation to them. By comparing our current methods to another alternative, and by looking at several appropriate measures of effectiveness, we may find a different approach preferable.

Suppose we reorganize and commit personnel to one homeport, and even take this one step further by assigning them to one ship for their entire careers. Normal shore rotations would still occur, but the same homeporting would generally be observed for assignments. For manageability, I will examine only the enlisted community in this paper.

If we offer potential recruits and current members such an invitation, a multitude of effects could be expected. Here, an appreciation of the unusual circumstances which characterize naval service is important. Living conditions and working environments would obviously change a great deal, and the terms of enlistment would need to be revised.

The pros and cons of relocation vary with individual tastes, but also have relatively common threads. If an individual knows that he or she can put down roots, a degree of uncertainty and risk is removed, which would naturally alleviate certain pressures. For example, moving a whole family can be a real problem. Each member has his own needs, and moves often cause great interference with school and work opportunities. Also, it is difficult to properly plan for a home. An investment of this nature is seemingly impossible for some, and a state of flux creates additional problems.

Personal problems are only exacerbated when a member must face the rigors of learning a new job. After he or she has gained a niche, it is not necessarily easy to face starting over again. That sense of security in knowing your job is gone; expertise, and respect must be sought all over again.

As a result of permanent duty as such, we might find cost savings for the Navy in almost every area one could imagine. Basic administration needs would be cut down considerably; inprocessing and outprocessing demands that create gigantic paperwork nightmares would be lower. Costs of PCS moves would decrease. Indoctrination and training programs could become more specialized, and could be better directed to meet ship's needs. Because a given ship's personnel would not constantly change, budgeted money might be used more effectively, and certain at sea exercises for experience training could be cut back, which would also save in fuel costs. If permanent duty appeals to the enlisted community, retention and recruiting efforts would reap natural benefits.

There are a variety of areas to explore on ship board itself. For the commanding officer, the expertise of an elite crew, tailored to his expectations, can be rewarding. For overall Navy operational effectiveness, an expert crew could prove invaluable. There would be less error, and there would be an inherent feeling of unity which might provide that extra element necessary for dealing with a critical situation.

The Navy's environment is changing. There are piecemeal efforts to cut costs, by doing such things as restricting PCS moves, and encouraging and often requiring specialization by enlisted and officer personnel alike. A big picture approach to cost minimization is important. A re-evaluation of current methods might show permanent assignments to be an alternative to the piecemeal approach.

In my comprehensive review of the literature, both published and unpublished, I found no current literature which focuses strictly on homesteading. In my various interviews and conversations, I found many people had a general aversion to the idea, or had no conceptual framework which would support the notion. Many consider the idea novel, and many feel it is basically impossible. Quite surprisingly, I found many people didn't really know exactly why they felt that way.

For homesteading to be workable, it must be manageable. The biggest problem when one tries to envision a new concept is that one tends to try to fit a square peg into a round hole: people will put homesteading in the context of the current system and what they know. But homesteading must be put in another context.

First, when I speak of homesteading, I am referring to a program restricted to the enlisted ranks. Second, homesteading affects not only geographic considerations, but also job considerations. Under homesteading, individuals would be assigned to one ship for all their required sea duty, and to one shore installation for all of the shore

billets they would fill during a career. Job rotation would then involve only a move from one particular ship to one particular shore outfit, and back again as required. Exceptions to this would arise when the needs of the Navy or of the individual dictate.

B. THE NOTION OF A TRADITIONAL CAREER PATTERN

1. Advancement

How can someone advance in his career if he is restricted to one particular ship, let alone to one particular duty station? This question often arises because people tend to think of a career in terms of attaining rank, versus achieving tenure or improving performance. Some perceive that serving in certain billets may help a person in reaching specific career milestones. Critical development tours are very important in the current system. In the military, enlisted careers are as much a product of the organization as of the individual. The Navy emphasizes a certain sequence of events, and the service members strive to succeed in these areas. The perceived relative importance of career milestones can be changed though. For this to happen, the status quo would need to be changed. If, for the most part, personnel were encouraged to remain in one job, individuals would eventually change their own internal definitions of success accordingly.

Obviously, our system of advancement would need to be revamped. When thinking about the Navy, people tend to associate pay raises with advancement. Increases in pay are probably the main reason people strive for advancement; recognition possibly takes a close second. But pay raises and advancements do not have to go together. Job performance and tenure can be the focus for pay raises. Most people will acquire both general and specific skills simultaneously. It is difficult to isolate one from the other. Tenure should have a relatively large effect on wages, since it reflects both general and job-specific training at the same time. For example, under homesteading, a person could remain an E-1 Boiler Technician for the course of his career, but with raises such as suggested above, he might conceivably make the same amount of money upon retirement as had he been promoted to E-9.

Also important to realize is that permanent duty would not preclude job advancement. Opportunities for advancement would still exist, along with appropriate increases in pay. But the opportunities would be much more limited. Should an individual be dissatisfied with a situation because he cannot advance, he could ask to be assigned where there is a suitable position to meet his needs. Once again, this would be an extraordinary situation, not the norm.

Won't job permanence create resentment among those not given the opportunity to advance? How will an E-1 with ten years in service feel working side by side with an E-1 with no tenure? It is important not to interject the values of the current system into the hypothetical system I propose. We can learn from the civilian sector, which has people doing the same job but paid differently because of seniority. For example, union and non-union job shops employees who do assembly line work are paid according to seniority. Fast food chains such as McDonalds, high schools, defense firms such as Rockwell or Northrop are other examples of businesses creating wage levels according to seniority. Clearly, a feeling of equity is predominant among those in the civilian work environment; people understand that progression in such a system requires certain things, and that time on the job is a major factor.

Under homesteading, the Navy would still observe clear lines of authority and distinct levels of experience, but these would be observed in a fashion similar to industry. Individuals in the civilian environment have rank and clout: these are just labeled differently.

2. Job Rotation

If we leave people in the same job, won't they suffer from stagnation and eventually experience job burn-out? There will always be trade-offs. Some personnel might stagnate, but the overall gains in job proficiency should outweigh that problem. Moreover, stagnation can be combated in a many ways, such as by changing or altering tasks. Job rotation should not be an immediate solution for those suffering from job burn-out.

With homesteading, personnel would still be changing jobs whenever they rotate from sea duty to shore duty, and back again. This occurs on average every three to four years. Opportunities would still exist to change jobs, but the norm would be one of staying in a particular position for extended periods of time.

C. SHIP'S INTEGRITY

I suggest that permanent duty would make the system more efficient because it would encourage esprit de corps. A natural outgrowth would be a feeling of team spirit, and a more cohesive work environment. People might have a tendency to make greater contributions because they would recognize their ship or station as their home base, not just as another stepping stone in their career.

1. Job Continuity

A greater continuity of specific jobs and systems would evolve. The expertise of a specialized crew would allow for a better tempo of operations. With a system of constant turnover, training and inspections are often used to bring people up to date instead of polishing skills. Every time a person leaves a command and a new person reports for duty, efficiency is compromised because of time lost in training the relief. Continuity would prevent this type of inefficiency.

2. The Training Environment

Some might fear that homesteading would compromise the procedures the Navy follows which maintain its current level of defense readiness. But homesteading does not imply that training schedules, ships' deployments, and related activities would be interrupted. All operations would continue as currently planned and scheduled. Changing homeports and moving one's family and personal effects do not constitute a contribution to military readiness. The nature of the business keeps Navy personnel used to deployments and ship operations, and it is not necessary to extend this to the homefront as a matter of routine. We are not in the business of training spouses and military dependents. Relocating military members from one homeport to another incurs unnecessary expenditures, especially when conducted on as large a scale as it currently is.

3. Material Benefits

Homesteading would contribute more to material readiness than does the current system. When there is continuity of personnel, historical data has a greater chance of being better and more accessible than in a system of constant turnover. The lifecycle of many operations would extend because there would be greater consistency.

Many conditions would benefit from consistency in personnel. Some examples are obvious, such as administration; job continuity offers less chance of losing internal controls. If people are held accountable for extended periods of time, and they cannot look forward to job rotation as a means of shirking responsibilities, they would probably make a greater effort to keep things updated. By retaining personnel in permanent positions, we will encourage comprehensive knowledge of a ship's activity by a ship's force, as well as job specific knowledge at the grass roots. The "as long as it's not on my watch" attitude would change a great deal as personnel recognize a certain ship as their own.

Other examples are more subtle, and over time, if left unattended, create extreme hazards. For example, deteriorating ventilation is very difficult to detect, but over time, it is life threatening. Personnel who are onboard for a career would know what conditions should be like, and could identify a situation of deteriorating ventilation more readily.

Another simple example is that of equipment replacement. There would not be that sometimes unmanageable backlog of equipment that needs replacing. If people know that they will be there for a long time, chances are that they will make more of an effort to keep things in proper running order. Since accountability for the material upkeep of a ship would remain in the same hands consistently, conditions would probably improve.

II. CURRENT INITIATIVES AND RELATED STUDIES

A. THE ORGANIZING PRINCIPLE

Significantly, there is a dearth of information pertaining to the concept of homesteading. The various studies I examined contain references to a homesteading initiative, but the idea is never really explored. I discovered several concepts which offer sound and constructive cost saving and retention ideas about Navy tours and career patterns for the enlisted community. These ideas are related to each other. We should not simply extract simple and formal rules from each study on a case by case basis, but instead should envision what the implications are if we combine all the ideas into one scheme. By isolating one innovative idea from another, we in effect make the ideas independent and their full potential cannot be realized. We need an organizing principle; homesteading is such a principle. In this case, we might look to homesteading as an umbrella for the ideas examined in the following studies:

1. The Enlisted Personnel Individualized Career System (EPICS).
2. The Improved Marginal Pipeline Costs of Enlisted Personnel.
3. Geographic Stability for Boiler Technicians.
4. The Interrelationship of Personnel Losses, Promotions, Tour Lengths and Navy Manning.

These studies are examined in the next few sections. Keep in mind that each section as it stands alone will not reenforce the potential in homesteading. But it is important to understand these ideas.

B. BACKGROUND

The Navy's current rotation and assignment system is geared towards relocating members about every three years. This relocation entails job moves and geographic moves. In a typical career lasting 20 years, an enlisted person moves about eight to ten times. And these are not simple moves: a member's entire family and household is expected to make the transition, unless otherwise directed by the government as in the case of a remote, unaccompanied tour.

The Navy wishes to develop generalists. That is probably the main reason for a system based on reassigning people every three to four years. By creating generalists, we create a ready force. The more diverse an individual, obviously the more he or she

can undertake in any given situation. The situations may vary, from that of a state of emergency which requires immediate attention by whomever is at hand, to that of a day to day function that needs to be filled so as not to have a billet unoccupied. Should everyone be specialized in a particular field, stepping in and adequately filling a gap becomes a difficult matter. Perhaps we view the outcome in this way because specialization is not our routine. If it were, it would not be the unmanageable system it is deemed to be. On the contrary, it may prove itself to be the more practicable and effective use of existing resources and manpower. If we pool from a known source of specialists, and these specialists are available Navy-wide, we are applying expertise where we really need it. The unfortunate facts are that we are facing a decline in recruitable young males who meet our qualifications. This is coupled with increased costs with accessions, to include training and moving.

Generalists are obsolete in the sense that today's Navy is becoming increasingly complex due to technology, and the jobs that service members perform are becoming more and more specialized as a result. Generalization and specialization essentially oppose each other. True, both can be realized, but not without sacrifice by both the service member and the Navy. The role of an enlisted man needs to be redefined. Tradition dictates general knowledge and expertise on too wide a spectrum given the events of the twentieth century. We are still running the Navy based on yesterday's technology. The next two sections introduce areas which support the wisdom of creating specialists. The section on Enlisted Pipeline Costs provides cost considerations, while the section on Enlisted Personnel Individualized Career Program not only demonstrates cost reductions, but performance benefits as well.

C. ENLISTED PERSONNEL INDIVIDUALIZED CAREER PROGRAM

The career pattern for enlisted personnel is based on occupational specialties called ratings, which are independent of individual shipboard systems and hierarchies. As an individual advances, he must do more and more tasks that contribute to the ship's management and administration rather than as related to his occupational specialty. Consequently, he becomes more and more of a generalist. Also, serving the ship as a generalist might interrupt an individual's career path, and take him away from his rating. Consequently, sometimes the more critical senior levels in complex systems go unfilled and unattended [Ref. 1]. We end up not using our people for what they are trained for, or to the extent that we could.

A system is being developed that will prepare personnel for early operational and technical contribution, that will minimize and defer the initial training investment of personnel, and that will use the available manpower resources we have. This system is called the enlisted personnel individualized career system (EPICS) program. "It defers formal school assignment to follow sea duty, provides early on-the-job experience complemented by job performance aids (JPAs), and includes self-paced instructional and preparatory materials enabling the seaman to understand and adjust to the shipboard environment as well as prepare for an optimally-phased, formal, shore-based schools program" [Ref. 2: p.vii].

The operational feasibility of this system is currently being tested and evaluated aboard 34 ships. This is a "total systems" ¹ concept. The test group used is the NATO Seasparrow Surface Missile System, which is operated by the fire control technician rating (FTM). The objective of this effort is to estimate and compare formal training costs and costs related to the curriculum, the specific instruction programs used, the job performance aids, and the required staff support to the conventional personnel system. The Navy's current approach to technical training for Navy enlisted classification (NEC) qualification is characterized as heavily front-end loaded, since technical training immediately follows recruit training. This causes a high degree of uncertainty with respect to return-on-investment, since significant expenditures are made during this relatively premature period. Specific concerns of those reviewing the current system include long and congested training pipelines, deteriorating skill and knowledge, lack of effective shipboard skills training, and less than fully effective use of available personnel capabilities. The EPICS program defers expensive shore based training and provides work-related support in the form of early ship/weapon system experience, job performance aids, and individualized training programs; in other words "on-the-job" training. Formal training experience is also provided, but no earlier than one year after enlistment. In this way, the prospective trainee's adaptability to shipboard life can be tested and the uncertainty associated with return-on-training investment reduced. After they have completed apprentice technician duty and demonstrated satisfactory job performance to their supervisors, trainees are sent to shore-based equipment technician training, and eventually to additional training about the entire system (system technician training) during their enlistment. The EPICS

¹This simply means that the system focuses on the whole career in an effort to streamline it, rather than approaching each step as it comes.

program creates an individualized career path by integrating technical skills, shipboard duties, and educational opportunities.

Two main comparison groups were included in the EPICS test and evaluation plan. Members of these groups are being tracked throughout their enlistment. Appendix A provides a list of the comparison groups, and Appendix B provides the interim findings of the study.

The March 1986 results for EPICS were very favorable. Systems technician qualification level ² and costs are actually better than the conventional personnel system (CPS). Sailors' performance proved to be equal or better. Advancement was 90 percent for EPICS personnel, 75 percent for general detail CPS personnel, and 95 percent for FCs in the normal pipeline [Ref. 3]. Table 1 is a comparison of the EPICS program results and CPS results as of March 1986. Notice how well EPICS fairs compared to CPS, in all categories.

TABLE 1
COMPARISON OF EPICS AND CPS

<i>RESULTS CATEGORY</i>	<i>EPICS</i>	<i>CPS</i>
Training Time	32 weeks	68 weeks
Training Costs	3,250K	6,480K
Attrition Costs	251K	1,286K
"C" School Post Test	63% average	54% average
Proficiency Program	75%	76%

Source: Navy Personnel Research and Development Center

Sixty-seven percent of the commanding officers commented positively about EPICS, 25 percent were neutral, and only 8 percent were negative. The future for EPICS looks very good; there are hopes to expand it into other communities, and to continue the enlisted career research in this area.

²This is a performance score, with a minimum requirement level.

1. Results of the Study

The findings indicate that the objectives of the program can be met. The reaction of the fleet has been generally positive, and EPICS personnel performance has been at least satisfactory. Just how cost effective EPICS will be in the long run is difficult to measure. The data concerning attrition, reenlistment, and performance levels indicates that EPICS fairs quite well in comparison to CPS. The extent to which EPICS can be generalized is still unknown. How to institutionalize EPICS within the Navy manpower and training system is one of the more challenging research and development areas left to investigate [Ref. 4: p.29]. The bottom line is that costs are lower and benefits are higher. Since this study was conducted on a relatively large scale (34 ships), it is not unreasonable to suggest that EPICS should be incorporated fleet-wide.

The EPICS program would be most successful when coupled with continuity of personnel and job specialization. The success of any program, such as EPICS, is limited by conventional boundaries. It would be difficult if not impossible to lobby for these ideas in the context of the existing system. The mere fact that the program produces positive results at all is reason to believe that under appropriate conditions with homesteading, the results would be quite impressive.

D. ENLISTED PIPELINE COSTS

The predicted shortage of recruitable young males and increased training costs are added obstacles in maintaining the levels of readiness expected for today's Navy. The elements used to assess how critical the shortages are in particular occupational specialties include the following: total accession objectives and attainment; individual skill accession objectives and attainment; year group manning; ³ pay grade manning; ⁴ first-term manning level; ⁵ initial enlistment periods; and training investment [Ref. 5: p.III-7].

Retention is important to the Navy because replacing qualified personnel is costly. The number of accessions required to meet any given force strength objective is a function of the losses of active duty personnel, and the vast majority of these losses

³Year group manning is defined as the degree to which the desired number of personnel from a given year group is achieved.

⁴Pay grade manning is defined as the degree to which the desired number of personnel from a given pay grade group is achieved.

⁵First-term manning level is defined as the degree to which the desired number of personnel from the current year group is achieved.

occur after first term duty. Pipeline costs for enlisted personnel include training costs (mission, support, and trainee pay and allowances), and non-training costs (recruiting, examining, enlistment bonus, personnel processing, permanent change of station, and medical and dental).

Management, Consulting and Research, Inc., (MCR) conducted a study to determine the marginal costs for each of these elements, using data from fiscal year 1982 figures [Ref. 5]. According to this study, training constitutes the largest accession pipeline ⁶ cost for enlisted personnel. Accession non-training costs, although less than direct training costs in the aggregate, comprise a substantial portion of the pipeline budget for enlisted personnel. Appendix C provides an extensive look at the various marginal costs. Table 2 provides a summary of the training and non-training costs associated with each accession for fiscal year 1982.

TABLE 2
SUMMARY ACCESSION PIPELINE COSTS, FY82

<i>COST CATEGORY</i>	<i>AMOUNT</i>
Training Mission	\$1,094
Training Support	398
Trainee Pay and Allowances	4,711
Recruiting	1,843
Advertising	175
Examining	169
Enlistment Bonus	171
Personnel Processing	631
PCS	1,146
Medical and Dental	217
<i>TOTAL</i>	<i>\$10,555</i>

⁶An accession pipeline is a term used to describe the steps involved in an enlisted member's first six months in service.

We require high quality personnel for several important reasons. "The machinery of modern warfare requires recruits who have the mental capability to absorb complex technical training. Training costs can be reduced by limiting enlistments to highly qualified individuals even though men with less mental ability could be taught the requisite skills with enough training investment. The disciplinary problems created by men in the lowest mental group contribute to administrative costs and detract from force effectiveness. Given the normal attrition and losses to nonreenlistment, the services must have a large fraction of highly qualified recruits to provide the raw material to staff the non-commissioned officer ranks" [Ref. 6: p.45].

The EPICS program supports the idea of deferring much of the training and associated costs of an accession. Therefore, many of the costs we consider as fixed would become variable, according to what a person would be doing in the Navy and how much on the job training he or she would have. The relevant fixed costs for an accession would then be recruiting, advertising, examining, personnel processing, PCS, medical, dental, base pay and allowances, and any enlistment bonus.

E. GEOGRAPHIC STABILITY

1. Background

As the cost of moving becomes an increasingly significant factor in the career decisions of Navy personnel, it is necessary to move toward a less ad hoc approach of providing a degree of geographic stability for our personnel. In Fy-79, 22 percent of our operational and training PCS moves were homesteading moves; that is, change of duty moves within the same geographic area. This figure increased to 25 percent in FY-81.

In FY-80, of all Navy personnel stationed in Norfolk and San Diego who received PCS orders, 50 percent of the officers and 43 percent of enlistees were retoured in the same area. There are, however, priority requirements which necessitate that personnel be transferred away from areas of major fleet concentrations. An example is the need to fill shore priority-manned billets, which are at locations other than major fleet concentration sites, with our top performers.

In the last several years, 20 percent of all Navy PCS moves have been "no-cost" moves. "No-cost" means that the service member incurs the entire cost of the move. While the bulk of the "no-cost" moves are within the same geographical area, this figure is not a representative indicator in evaluating Navy's performance in providing geographic stability for our people or in reducing PCS costs.

The Navy, as a matter of unwritten "policy," strives to return personnel in the same geographic area. The degree to which Navy requirements and career patterns will support guaranteed multi-tours at the same geographic area (Geographic Stability) is now under study by the Naval Personnel Research Development Center. ⁷

2. Personnel Geographic Stability

All of the studies of geographic stability attempt to quantify many issues associated with tour lengths. These studies were all restricted by the environment in which they were conducted. It is difficult to create inducements that actually work. The following discussion emphasizes this idea.

In 1982, a personnel geographic stability (PEGS) program was examined and assessed [Ref. 7]. The PEGS program gave individuals preferred assignments to a single geographic location for one or more follow-on tours. The program was designed to retain high quality personnel. The PEGS work focused on a single rating, boiler technicians (BT). This was apparently done for manageability. The program used a homesteading strategy, which was based on maintaining the sea-shore rotation equilibrium, priority manning objectives, and an overall balance of the supply and demand of Navy manning.

There were possible disadvantages arising from a formal PEGS program. Retention could experience an ironic turn of events. Those excluded from the program might find the situation inequitable, and those participating might be given promises of future assignments that could not be fulfilled. For example, certain priority shore billets must be filled with high quality people. These are considered CNO priority 2 billets. Many of these billets are outside homeport areas that are seemingly conducive to geographic stabilization. For example, there are instructor billets located at Great Lakes, but Great Lakes is not considered an option for back-to-back tours because the command is not near the real fleet, which is in places such as Norfolk or San Diego. Those who conducted the research contended that if a PEGS program involved back-to-back tours only in the same area, then the people not at a convenient location might be excluded from the program.

Other disadvantages considered by the researchers were that of a potential loss of fleet balancing flexibility, and limited career opportunities. After priority billets are filled, the remaining personnel are used to balance the fleet. Providing geographic

⁷The statistical information in the preceding paragraphs is from the Naval Military Personnel Command.

stability to some means that the number of personnel available for such balancing is reduced, and career path opportunities become more limited for the others.

Appendix D provides the steps used in analyzing PEGS, and Appendix E provides the group's conclusions and discussions. They recommended that the strategy and model be used as planning tools to give personnel managers the opportunity to answer hypothetical questions about the location of new billets and changes in personnel losses and manning levels. The group also recommended that the "pay-back" tour for PEGS come at the start of the program, as an incentive for the homesteading strategy. They also noted that the program needs an implementation period of about eight years to be effective.

Although the results of PEGS were not particularly impressive, the researchers did not want to abandon the idea of homesteading.

The PEGS experience does not undercut homesteading. Obviously, if back-to-back tours are thought of as an inducement or reward, homesteading must be considered a good thing by the enlisted population. The ideas behind the PEGS experience are not that different from the idea of homesteading. Problems arise because flexibility in the existing career pattern of enlisted personnel is minimal, yet flexibility is an important element necessary to make PEGS work. Because PEGS was limited to a single rating with limited flexibility, those who participated could not be guaranteed the reward of a back-to-back tour. Only those who were conveniently located could be offered some reasonable guarantee, and even then the needs of the Navy were the first priority. So if a certain person was demanded for a certain priority billet other than his PEGS designated prize of a back-to-back tour, then that person would not receive anything for his participation in the program. The difference between PEGS and homesteading is very elementary. Homesteading would mean back-to-back tours for everyone who wants them. PEGS offers this as a single reward, which is considered out of the ordinary. Anytime there are limitations or restrictions imposed on a program, the results will underestimate its true potential. Homesteading would offer more flexibility because personnel would not have to rotate jobs or locations every three to four years. A rotation policy such as the current one makes back-to-back tours more difficult to attain. Also, homesteading would offer special incentive programs to encourage people to participate. These special incentives will be discussed in a later chapter.

3. Current Length of Stay

The lack of geographic stability is a going concern. A more recent study was conducted in 1985, which assesses just how long people remain in any given location. The introduction to the study says that there are hints that geographic instability has become "a source of increasing frustration for enlisted personnel" [Ref. 8]. People's concerns about migration are highlighted, especially for dual earners. It is anticipated that the trend will be towards either voluntary geographic separations for households, or towards lower retention if family incomes are higher overall if members sought employment elsewhere. The cost effects associated with geographic stability were not analyzed in this study.

The current lengths of stay in geographic areas for five "sea-intensive" combat system/propulsion ratings were simply put together, as an important step in determining the feasibility and cost effectiveness of increased geographic stability. The ratings were Boiler Technician (BT), Fire Control Technician (FT), Gas Turbine-System Technician (GS), Operations Specialist (OS), and Sonar Technician (ST). The geographic areas were Charleston, Hawaii, Long Beach, Mayport, Norfolk, Newport, San Diego, and San Francisco.

Lengths of stay varied quite a bit in the eight different locations. San Diego had the longest stays, and Long Beach and Newport averaged the shortest. The study found that there is less variance in the average length of stay for the different ratings involved than for the different locations.

Table 3 provides the percentages of those personnel (in this study) who stayed in their respective duty stations four, six, and/or eight years. This table provides the averages of the percent remaining of all five ratings, at each of the eight different locations. Where there was insufficient evidence, the percent is listed as unknown. For the eight different locations and five different ratings, at least 20 percent of the personnel remained at least six years.

The percentages indicate that lengths of stay for personnel do not approach a level of homesteading. With only 8.47 percent remaining after eight years, people on the whole do not achieve geographic stability. Although the numbers support the fact that the conventional system of rotation is followed, (i.e. the majority of people rotate every few years), they do not serve as proof that that system is better or more efficient. Unfortunately, a comparison between the conventional system and homesteading cannot be made with accurate results. Since PEGS incorporated initiatives that tend

TABLE 3
PERCENT REMAINING

<i>LOCATION</i>	<i>% after 4 yrs</i>	<i>% after 6 yrs</i>	<i>% after 8 yrs</i>
Charleston	44.84	24.73	9.5
Hawaii	32.34	13.73	5.9
Long Beach	36.14	16.15	unknown
Mayport	36.22	43.3	4.7
Norfolk	46.2	17.42	6.0
Newport	37.3	unknown	unknown
San Diego	49.4	27.94	16.27
San Francisco	35.48	unknown	unknown
<i>WEIGHTED AVG</i>	<i>39.74</i>	<i>23.88</i>	<i>8.47</i>

towards homesteading, some might feel that PEGS would be a suitable basis for a comparison. As noted earlier, the results of PEGS are not truly representative of the potential in homesteading, and a comparison of this nature would be biased.

4. Personnel Losses, Promotions and Tour Lengths

Another study on "The Interrelationship of Personnel Losses, Promotions, Tour Lengths, and Navy Manning" ties in to the stability issue [Ref. 9]. This report describes an initial attempt to quantify the interrelationships of personnel losses, promotions, and tour lengths, and their impact on Navy manning by pay-grade and duty type. The effort identified rotation resource tradeoffs and showed that, for developing a realistic sea-shore rotation model, promotions and attrition rates of enlisted personnel are as important as rotation flows.⁸ The interrelations of losses, promotions, and tour lengths are complex and their impacts are not easily understood. In the past, sea tour lengths were calculated by multiplying the shore tour length by the ratio of sea billets to shore billets at each pay grade. "Recent theoretical work by Sorensen (1982) demonstrated that this calculation is not meaningful in the presence of attrition and promotion" [Ref. 9: p.1]. Within a Navy enlisted occupation (rating),

⁸Rotation flows are based on the number of enlisted personnel who are assigned to billets according to their current pay-grade.

promotions into a pay grade and duty type (sea-shore) make up a significant part of manning (personnel level), and this fact is not taken into account by the manning ratio calculation of sea billet to shore billet at each pay grade. Sea-shore rotation trade-offs require more than simple proportional adjustments to tour lengths.

The survival tracking system (STF) tracks groups of individuals to obtain information on their survival, attrition, promotion, and rotation over time. This is a relatively new method of gathering longitudinal personnel data. The detailed information from STF was used to formulate and verify the types of interrelationships involved in "rotation/manning tradeoff" analysis. The study used longitudinal data from the boiler technician rating (BT), (which was also used in the study on assessing the personnel geographic stability program, as well as the study on current geographic stability). Theoretical models were developed. These modeled rotation, average tour length, and manning by duty type and pay grade. "Cohorts were defined as populations entering either a new pay grade or duty type. Longitudinal aspects were measured based on time in a cohort rather than on length of service (LOS). Finally, a cohort-based single pay grade sea-shore rotation model was developed to analyze tradeoffs of rotations-in versus promotions-in to a pay grade/duty type" [Ref. 9: p. vii].

Their simple rotation model shows that manning levels at particular commands are determined by the inputs and the outputs of specific pay-grades. Input equals the number promoted into a pay-grade plus the number rotated in to it. Output equals the the number promoted out of it plus the number rotated out of it plus losses due to attrition. In other words, a command will be given an allowance for the number of billets it can have in a given pay-grade. The command will know how many of those are filled or available by knowing the number of people already in place in that pay-grade plus the number of people who are promoted to that pay-grade from existing command assets plus the number who are sent to the command who are in that pay-grade, minus the number of people who are promoted to a higher pay-grade, the number of people who leave the Navy, and the number of people who leave that command to go to another assignment. The following is an example of this.

If an individual rotates to sea at pay grade E-5, and is promoted to E-6 during the tour, then that individual is counted as an E-6, not as an E-5, for the planning of sea duty manning. Although enlisted personnel are assigned to commands, not to billets, the shortages and overages in the billet manning for each unit are compared with Navy-wide shortages and overages. If a command is short an E-5 in the rating

relative to other commands in the Navy, then an E-5 will be assigned to the command if there is an available person. The command's E-5 manning will then reflect this addition, and will no longer be one E-5 short. But if that same person gets promoted to E-6, the command will once again reflect a shortage of an E-5, if someone else hasn't been promoted from E-4 to E-5 at the same time in that command. When the E-5 is promoted to E-6, he or she would be counted with the command's E-6 manning, even though he or she might continue doing the same job.

As demonstrated in the preceding paragraph, manning in a duty type at a pay grade has two sources: promotions made while assigned to a command (promotions-in), and rotations made into the command (rotations-in). In the past, rotations-in were the only source considered for the sea-shore rotation ratio.

The study referred to above, entitled, "The Interrelationship of Personnel Losses, Promotions, Tour Lengths, and Navy Manning" was conducted to explore the relative importance of these two sources of manning, to determine if the current method of setting tour lengths is appropriate, and to observe the continuation or survival in a pay grade or duty type. To achieve the maximum possible manning in one pay grade, such as E-5, may improve manning at that level, but at the same time it may affect E-4 and E-6 manning levels as well.

For the study, each duty type for each pay grade examined was broken into two distinct groups; the promotions-in and the rotations-in. The purpose was to find the similarities and differences in the two groups. They found that for new E-5 promotions at sea duty, losses occur mainly from attrition and rotation. For E-5 rotations to sea duty, most of the losses were due to promotions to E-6. The same results held true for the shore based group of BTs. "The effects of significant changes in tour patterns and promotion patterns need to be investigated for a complete analysis of possible rotation tradeoffs to achieve adequate manning and to determine the best possible sea-shore tour patterns for an enlisted rating community" [Ref. 9: p. 15],

It is obvious that current manning methods are sometimes inappropriate and more complicated than is necessary. It is difficult to assess precisely which operations and jobs aboard ship are lacking in manning, or in qualified personnel when one looks at pay-grade as the main measure. The system is driven by rate, not necessarily by job or function. This simply creates confusion. Homesteading would alleviate these types of manning problems. A commanding officer would be able to identify a gap, and request a person in that field of expertise fill it, without the need of meeting manning

levels with-in a pay grade. Commanding officers would therefore enjoy greater flexibility with their current assets. It should be noted that this does not imply that homesteading is the only solution for this problem. Commanding officers still have other alternatives under the current system to better manage their personnel. Homesteading is one way to stabilize and streamline manning obligations.

For example, if a ship has four E-5 positions in the supply department, and one of these men is promoted to E-6, current supply department E-5 manning levels will be red flagged as inadequate. The irony is that the person has not gone anywhere, he has just been promoted. The supply officer may not be short in terms of jobs and people to fill those jobs, but he must report his E-5 level as being short a man. Without this attention to pay-grade, there is no problem in manning.

Another example involves a man leaving the ship. Suddenly, the manning level is actually short one person. Under the current system, if the position is not filled by a man in the right pay-grade, no matter how many people report on board in other pay-grades, the ship will always be one man short. Under homesteading, a commanding officer would be able to identify a gap and use his existing resources to fill it. If he then cannot fill the position because he cannot find a qualified person, then he would report manning deficiencies.

Still another example involves a person who cannot make grade, in other words, is not worthy of promotion. Under the current system, a person would eventually have to get out of the Navy. "Up or out" is the term associated with this aspect of the current promotion system. The unfortunate reality here is the dismissal of many people who do their jobs very well, but who cannot perform any better than at the level they have attained. The Navy has invested a lot of money and time in these people, but there is no place for them in a system based on promotions. Under homesteading, commands would not be forced to get rid of people who contribute as much as anyone else at that level. If for example, the Navy could retain an E-3 for twenty years, who otherwise would have been forced out at the six year point, fourteen years more of return-on-investment would be realized.

III. MIGRATION ISSUES

A. INTRODUCTION

Retention can be affected in a variety of ways, and migration is one of the major factors affecting it. Rotation policy in the Navy is demanding, and its negative effect on retention has yet to be given the type of attention it deserves. PCS moves cause a variety of problems both for Navy families and for the Navy itself. The current policy requires mandatory participation. Personnel moving bear full responsibility in coordinating and orchestrating their moves. The Navy technically bears the direct costs of the moves, which are those costs associated with the physical transportation of household goods and family members. (See Appendix F for the different categories of PCS entitlements.) Unfortunately, the reimbursements allowed often do not fully compensate a member's direct costs. Moreover, moving has psychic costs and other indirect costs. The Navy should balance the benefits of relocation against the costs. Relocation reduces productivity in the short run because personnel must take time away from their duty to prepare for a move. Productivity is also affected in the longer run, because personnel must learn new skills in a new work environment. The Navy now recognizes that migration might cause reduced incomes for family members who must quit jobs and take the time to make the move with the active duty member. The cost of PCS moves for families is a major cost to Navy personnel, and consequently to the Navy, since it hurts retention.

1. Characteristics and Motives of Those Most Likely to Migrate

Only by recognizing the characteristics of migrants and their motives can we determine how the Navy's rotation policy might affect its people. We can then examine the characteristics of the Navy's enlisted population and determine what similarities there are, and any parallels that can be drawn. This will help us in evaluating our current rotation policy. In the civilian sector, migration decisions are based on a number of factors, including marital status, market earning power of the spouse (wife usually), family stability, and family ties. Mobility of workers among jobs and labor markets is a "manifestation of the job search process" [Ref. 10: p. 175]. Workers will compare the costs-- foregone income and the psychic losses attendant upon moving-- to the gains of higher incomes in new locations or jobs. Migration will

usually occur when the principal wage earner's gains will outweigh the losses to other family members. For instance, the potential loss of a wife's income will increase the wage that a migrating husband considers acceptable.

When people are asked about their reasons for moving, 70-85 percent of them say they move mostly for economic reasons [Ref. 11: p. 771]. Because workers consider all of the future gains involved in a migration decision, older workers are less likely to make a move or to change jobs [Ref. 11: pp. 749-773]. We should expect that workers will improve their overall job satisfaction as a result of a voluntary move, unless their calculations of returns available with a new job compared to an old job are irrational or lack sufficient evidence [Ref. 10: pp.175-176]. Workers who receive lower wages than they would if they were employed somewhere else are the most likely to quit. The relationship between wages and quit rates is very strong. Evidence shows that employees in industries with lower wages have higher quit rates. When labor markets are relatively tight, the quit rates are higher. Other factors being equal, job turnover, including quit rates, is lower as people get older, and overall job tenure increases with age [Ref. 12].

Navy personnel are often not given any choice in a migration decision. But this does not mean that Navy personnel are not governed by the same concerns as described above. As a result, migration may not be a rational choice for a person in the Navy, and feelings of inequity or dissatisfaction with the system arise. The more bad feelings generated, the greater chance the Navy has of losing people.

Mobility is much higher among the young and among the better-educated. The single most important factor in migration is age. Those between the ages of 22 and 24 move the most, those in their early thirties migrate at a rate of about half of those in their twenties, and those in their early forties migrate about half of that (which is one-fourth of those in their twenties). Evidence shows that young workers who quit their jobs will experience a more rapid wage growth in the long run than if they had stayed in their old jobs, while among older workers there is less evidence that workers gain from voluntary migration. This may be due to the fact that voluntary mobility rates are very low among older workers. Psychic losses of moving are greater for those comparatively well established, such as older workers.

While age is the best predictor of those who will move, within an age group, education is the best predictor of those who will move. "The labor markets for college-educated workers are more likely to be regional or national than are the labor markets

for those with less education" [Ref. 12: p.309]. The larger market for the college-educated is due in part to the amount of information available about job opportunities: higher-skill jobs have better networks associated with them.

Evidence on the effects of marital status confirms that married persons are less likely to move than singles, and the mobility of separated and divorced partners is by far the highest. Empirical evidence also shows that families with working wives are much less likely to migrate. When wives have a stronger and more permanent attachment to the labor force, migration becomes even less. Generally, educated husbands' contributions to family incomes are larger than that of the uneducated, and the gains of the former are more likely to be greater than their wives' losses. As a result, a husband's educational level is positively related to the distance of migration [Ref. 11: pp.770-771]. People are more likely to move a shorter distance than a longer one. Interestingly enough, 20 percent of all moves are back to areas where the movers have previously lived. This so-called return-migration is a reminder that "investments in human capital can also fail to be profitable" [Ref. 12: p.312].

The next two sections show some of the concerns peculiar to military members and their families. Some of the characteristics of enlisted personnel are identified. Especially interesting is the data on enlisted marriages.

B. THE EFFECT OF PCS MOVES ON MILITARY WIVES' EARNINGS

The Navy's current policy makes migration decisions for its personnel very different from the rest of society. Gains and losses are based on different factors. Since the Navy often limits the choices for its personnel, migration is sometimes automatic: there is no choice. This can cause unnatural uproots for families whose losses would actually outweigh any gains in income. On average, when a family moves to follow the principal wage earner, migration causes a decrease in spouse earnings of \$1000⁹ or more annually [Ref. 13]. Job search is time consuming for the individual expected to migrate with a military spouse. The timing and location of the move may be awkward, and jobs may be difficult to find in a new location. Potential employers may be reluctant to hire military spouses since they recognize that they will probably lose that employee within a few years. Compromise on salary and position by the

⁹This is in terms of 1977 dollars. This figure is from: Sandell, Steven. "Women and the Economics of Family Migration." *Review of Economics and Statistics* (Nov 1977). In 1986 dollars this amount is equal to \$1820.

employee are inevitable in many cases, since advancement and job training opportunities would be reserved for more permanent help.

The loss of earnings due to relocation is considered to be the difference between the actual earnings of the person who moves and what he or she would have earned had he or she not migrated. Jacobson and Thomason conducted a study on the effect of PCS moves on military wives' earnings and husbands' retention [Ref. 13]. The researchers made two basic comparisons. The first was between military wives who relocated between March 1975 and March 1976 and those who did not relocate. This comparison was made to evaluate the short-run effect of a single PCS move on earnings. The second comparison was between military wives who did not relocate and civilian wives who also did not relocate during the period of March 1975 to March 1976. This comparison was made to estimate the cumulative effect of PCS moves. The groups were statistically matched so that the characteristics that would affect earnings were identical before any moves took place. This allowed for a relatively good comparison following relocations.

The results revealed that, even when very low earners were excluded, losses were substantial. Much of the reduction in earnings was due to a reduction in weeks worked, which was in turn due to wives withdrawing from the labor force and/or searching for jobs. The findings also show that, had they not had to relocate repeatedly, military wives' average earnings in 1975 would have been 50 percent higher. Repetitive moves appear to cause a permanent reduction in earnings. Employers prefer stability; even if work histories and resumes are comparable among applicants, an employer will use stability as a criterion. Compared to the civilian work force, military wives worked fewer weeks and hours per week, earned lower wages, and were more likely to be out of the labor force during the time studied. At the time of the study, only about 12 percent of military wives worked full time and year round, compared to 22 two percent of the civilian wives. Although relocation has only a small effect on labor force participation, it substantially reduces the amount of work by those in the labor force. Migration leads to slower growth of wages over the lifecycle because it interrupts the continuity of women's work. The point is that relocation reduces the amount of work, not that it reduces labor force participation.

Research on the determinants of reenlistment estimate that a one percent decrease in military compensation would reduce first-term reenlistments by about two percent. This study on PCS moves made the assumption that the same relationship

would hold true for any reduction in family income. Moreover, using this reduction in family income as the only cost of moving would underestimate the loss in retention. The reason: the family has psychic losses from moving that are not counted in the lost family income.

The PCS study on wives' market earning power contends that eliminating migration would be valuable to only about 18 percent of potential first-term reenlistees--"those whose wives have high-work-intensity jobs or whose wives are discouraged from holding high-intensity jobs" [Ref. 13: p. 13]. The study advocates targeting a type of homesteading to those least likely to reenlist without it. Once again, we find a solution targeted on too narrow a scope, and if interjected as a remedy for this situation, we would probably find the results not particularly impressive. The disadvantages parallel the disadvantages of the PEGS program. Those not allowed to participate might feel resentful. This type of homesteading would ignore those who are not married yet would rather homestead, or those who are married but not considered as candidates. Homesteading could be targeted as narrowly as this study suggests, but there is still no guarantee that those who are allowed to participate would actually receive back-to-back tours.¹⁰

C. CURRENT MARITAL STATISTICS ON ENLISTED PERSONNEL

A look here at the single versus married issue is important. Current statistics show that 45.76 percent of enlisted personnel are married, while 54.24 percent are single or no longer married. It is interesting to note that only about 7 percent of the enlisted population is married upon first enlistment, but that after four years of service, over 60 percent are married. Obviously spouse considerations become increasingly important when examining migration issues. Spouse earning power has grown increasingly important to military families, especially considering that about 50 percent of the work force today is comprised of women [Ref. 13]. Table 4 provides a look at enlisted marital status by paygrade.

Notice that the higher pay-grades have higher percentages of those who are married. Another characteristic of the higher pay-grades is that they are comprised of the older enlistees. Both of these facts are also characteristics of those least likely to migrate, as discussed in the preceding sections. By enforcing our current rotation

¹⁰I draw this conclusion based on the results of PEGS, which was discussed in the preceding chapter. PEGS offered back-to-back tours as reenlistment inducements, but these were not always available as promised.

TABLE 4
PAYGRADE BY MARITAL STATUS

<i>RANK</i>	<i>MARRIED</i>	<i>SINGLE</i>	<i>TOTAL</i>	<i>% MARRIED</i>
E1	3,269	40,617	43,886	7.45
E2	5,777	38,167	43,944	13.15
E3	19,878	67,082	86,960	22.86
E4	40,394	67,047	107,441	37.60
E5	60,781	41,438	102,219	59.46
E6	61,686	16,951	78,637	78.44
E7	28,690	4,306	32,996	86.95
E8	8,910	1,039	9,949	89.56
E9	4,333	409	4,442	91.37
<i>TOTAL</i>	<i>233,718</i>	<i>277,056</i>	<i>510,774</i>	<i>45.76</i>

Source: Defense Manpower Data Center

policy, we are also going against the grain of what would be more natural for people to do, which is homestead.

Unfortunately, neither the Navy nor any of the other service branches has statistics on its divorce rate. This would be an interesting figure to have, because it affects how we should think about migration. Since the Navy gives its people little or no choice in the decision of migration, it places a strain on a family. For example, if you are committed to an enlistment period and the Navy says you must move to Norfolk from Seattle, you do not have the freedom to simply quit your job, unless you want to incur a prison term. So, if your family is not inclined to make the move with you, you must go it alone, and risk the dissolution of your homelife. I doubt too many recruits are that farsighted that they can comprehend the difficulties associated with a mobile military life. Upon first enlistment, the glamour of the new sites is enticing, if not invigorating. As time drags on, the glamour diminishes, and the reality of day to day living must be observed. Family concerns become increasingly demanding as a

family develops. So, it is difficult to remain enthusiastic towards your growing career if your family is suffering.

D. PCS COST CONSIDERATIONS

The extensive rotation of Navy personnel among various job assignments is a by-product of the Navy's need to meet manpower requirements and personnel management objectives under the current system. A permanent change of station (PCS) move is a transfer of a member from one permanent duty station to another permanent duty station for duty of more than six months or instruction of more than twenty weeks or more. Appendix G provides a list of the categories of PCS moves [Ref. 14: p.121].

PCS travel for fiscal year 1985 encompassed a total of 324,979 moves Navy wide, with a cost of \$551 million. Out of this figure, the number of enlisted moves was 287,452, costing the Navy \$405.4 million.¹¹ These totals cover six categories of moves: accession, training, operational, rotational, separation, and organized. Of particular interest to the homesteading issue are training, operational, and rotational costs.

Training involves movements from the last permanent duty station within the continental United States (CONUS), to duty under instruction at a school or installation for a period of twenty weeks or more in duration within CONUS. Training also includes movements from the last permanent duty station to duty under instruction at a school or installation located within an overseas area when no transoceanic (across the sea) travel is involved. Operational movements are to and from permanent duty stations located within CONUS and movements to and from permanent duty stations located within an overseas area, when no transoceanic travel is involved, including any authorized temporary duty/temporary duty under instruction en route. Rotational movements are between a permanent duty station within CONUS and a permanent duty station overseas when transoceanic travel is involved, including any authorized temporary duty/temporary duty under instruction en route. This includes movements to and from schools with a course of instruction of twenty weeks or more in duration and excludes movements of organized units.

¹¹The numbers for this section are from the Naval Military Personnel Command.

In fiscal year 1985, 29,049 enlistees were trained at a cost of \$34,143,000. 48,373 incurred operational moves at a cost of \$98,366,000. 34,847 took rotational moves at a cost of \$148,497,000. Table 5 provides a complete look at fiscal year 1985 figures.

TABLE 5
PERMANENT CHANGE OF STATION COSTS, FY 1985

<i>Type Move</i>	<i>Total # Moves</i>	<i>Total Cost</i>	<i>\$ Amount per Move</i>
Accession	90,899	\$54,775,000	\$602.59
Training	29,049	34,143,000	1175.35
Operational	48,373	98,366,000	2033.48
Rotational	34,847	148,497,000	4261.39
Separation	79,469	53,515,000	673.40
Organized	4815	16,082,000	3339.97
<i>TOTALS</i>	<i>287,452</i>	<i>405,378,000</i>	<i>1,410.25</i>

Source: Naval Military Personnel Command

With a homesteading initiative, we could move many fewer enlisted personnel in these categories. On average, the per person cost of each move is \$1175.35 (training), \$2033.48 (operational), and \$4261.39 (rotational). The Navy relocates about one third of its personnel every year, and in total, PCS moves account for about 8 percent of all personnel costs. Obviously the fewer people we move, the more money we save on moving costs.

The number of rotational moves is a direct function of programmed overseas strength levels and tour lengths. Overseas strength levels are based on military and political considerations. Tour lengths for each overseas location are prescribed by Department of Defense Directive based on the characteristics of each location and on whether or not a member is accompanied by dependents. Prescribed tour lengths at relatively desirable locations are 36-48 months when accompanied by dependents, and 18-24 months when unaccompanied. Tour lengths at less desirable locations are

necessarily shorter. However, when the conditions change at these less desirable locations, (when, for example, facilities are upgraded or expanded), the tour is lengthened. The objective is for all personnel assigned overseas to complete the prescribed duty tour for the location in which they are assigned [Ref. 15].

As of October 1986, the Department of Defense has increased tour lengths in twenty-eight overseas locations, including Hawaii, the United Kingdom, Japan, and most of Alaska. Guam is also included as a two-year test area. In these places, unaccompanied tours will increase from 24 months to 36 months. The final decision on Guam will be based on volunteer rates, extension rates and tour lengths served (for each of the services). Congress has directed the Pentagon to review its tour-length policy as a part of the 1986 Department of Defense Authorization Act. The conference report on the bill charged that the services have been using "subjective assessments of desirability" to determine how long tours should be. The Department of Defense has ordered a review of all locations with tour lengths less than the "36-month accompanied or 24-month unaccompanied rule." The reports call for specific information about overseas locations, to include geography, climate, social customs, housing, medical support, reenlistment and extension rates, training requirements, moving costs, and construction requirements. This tour length study is the ninth report that Congress has asked for, in an effort to minimize PCS costs [Ref. 16].

The more pressure there is from Congress to cut spending, the more important it will be for us to avoid making policies that don't offer the optimum solutions. Perhaps a homesteading initiative would be opportune at this time. An interesting statistic shows that from fiscal year 1983 to fiscal year 1984 there was a 3 percent increase in PCS moves, and a 16 percent increase in PCS funding, but only a 1.8 percent increase in overall defense end strengths. The push by Congress is to cut spending, but the trend shows we are doing the exact opposite. Current costs may now be outweighing the benefits of our PCS policy. As the costs soar and the results deteriorate, Congress may call for a complete revamping of current PCS policy. Homesteading would offer a way of preventing these rising costs.

E. CURRENT NAVY MANNING

To understand the ramifications of a homesteading process, it is important to know where and how many enlisted personnel are located throughout the globe.

Rather than listing all duty stations and the associated number of personnel at each, for the purposes of this study it would be more appropriate to look at some composites and generalities: ¹²

- * 192,695 billets are authorized for shore duty in the continental United States. 141,186 are actually filled.
- * 231,815 billets are authorized for sea duty homeported in the continental United States. 217,573 are actually filled.
- * 25,588 billets are authorized for shore duty overseas. This number does not include the billets allocated for overseas shore duty in areas considered remote. 24,661 are actually filled.
- * 16,823 billets are authorized for shore duty in overseas remote locations. 15,722 are actually filled.
- * 28,676 billets are authorized for sea duty with homeporting overseas. 27,077 are actually filled.
- * 48,353 overseas billets out of 71,087 overseas billets are located in Hawaii, Japan, the Phillipines, Guam and Italy. 46,276 are actually filled.

The following percentages will also be helpful:

- * 85.01 percent of all billets authorized are located in the continental United States (CONUS). This figure includes shore and sea duty billets. 38.59 percent of all billets are CONUS shore duty billets; 46.42 percent of all billets are CONUS sea duty billets.
- * 5.12 percent of all billets authorized are for shore duty overseas, in areas not considered remote.
- * 3.37 percent of all billets authorized are for shore duty overseas in a remote area.
- * 5.74 percent of all billets authorized are for sea duty billets homeported in overseas locations. This figure includes 10,371 billets authorized in the Hawaiian Islands.
- * 27.70 percent of the authorized overseas billets are located in Hawaii. This includes sea and shore billets overseas.

¹²The Naval Military Personnel Command is the source for the numbers used in generating these statistics. The numbers were current as of 24 November 1986.

- * 20.75 percent of the authorized overseas billets are located in Japan. This includes sea and shore billets overseas.
- * 6.88 percent of the authorized overseas billets are located in the Republic of the Phillipine Islands. This includes sea and shore billets overseas.
- * 9.42 percent of all authorized overseas billets are located in Guam. This includes sea and shore billets overseas.
- * 3.27 percent of all authorized overseas billets are located in Italy. This includes sea and shore billets overseas.
- * 68.02 percent of all overseas billets are concentrated in Hawaii, Japan, the Phillipines, Guam, and Italy.

1. Rotational Moves

Rotational moves made up 12.12 percent of all moves in fiscal year 1985, but they also accounted for 26.96 percent of the dollars. Personnel located in Hawaii make up 27.70 percent of all authorized overseas billets, as noted in the preceding section. If we were to homestead personnel in Hawaii, we could save 27.70 percent of the budgeted rotational dollars. Applying this to fiscal year 1985 figures, this would save 9,652 rotational moves (27.70 percent of 34,847 moves), and save \$41,133,669 (27.70 percent of \$148,497,000). This saves 7.47 percent of the total expenditure on PCS moves for fiscal year 1985. ¹³

We can derive similar statistics on billets in Japan. Since those billets constitute 20.75 percent of all overseas billets, 7,230 rotational moves could have been saved, had homesteading existed in Japan. This would have saved \$30,813,127.50, which is 5.59 percent of the total PCS dollars expended in fiscal year 1985. ¹⁴

We can encourage homesteading in overseas locations, which would decrease extensive rotational costs. In many places, homesteading could be successful. Consider that anytime a person is away from homebase, he or she will eventually want to migrate back again. But if we station personnel with the understanding that their stations will be permanent, they will develop roots wherever they are. I suggest that people would be willing to homestead in Hawaii, Japan, and other overseas locations,

¹³Table 5 of this chapter will support the figures. There is no evidence to support whether or not 27.70 percent of the rotational moves were to and from Hawaii for fiscal year 1985, but for the purposes of this example, the number is adequate considering the actual billet allocations. The same assumption will hold true for subsequent examples in this context.

¹⁴Rather than continuing the examples, it is sufficient to point out that this process can be extended to all overseas locations, as well as to rotational moves.

if they know the area as their home. The bad feeling of being away from "home" would not exist as it does for those stationed there under the current system. In order to promote the idea, we may need to offer them extra benefits; a discussion of flexible benefits is offered in the next chapter.

There will be areas where homesteading may not be appropriate. There are alternatives to current methods of filling sea duty billets overseas. We could rotate ships instead of individuals. With this, personnel would not need to commit to PCS moves overseas; their homeport would not change. Operational schedules of ships already include lengthy deployment schedules; this transfer of ships could become another type of scheduled operations.

This idea would save in areas other than PCS moving costs. If we send an entire ship, a composite crew is already in place. This crew would already be trained and the Navy would have the advantage of a specialized crew. It is difficult enough to operate in unfamiliar waters, let alone to have to contend with inexperienced personnel. The Navy could take advantage of the job continuity and expertise offered with homesteading.

IV. EXTENSIONS

A. INTRODUCTION

Homesteading suggests a reorganization of many of the current administrative methods employed in the Navy today. The next sections are natural extensions that deserve future exploration and consideration.

B. DEMAND-DRIVEN ROTATION

At present, our personnel procurement system is based on an all-volunteer force. It is completely up to an individual whether or not he enters into military service. But once he or she has made a commitment, the terms of enlistment restrict freedom of choice. During the course of the contracted period, your options and choices are limited. The needs of the service are the ultimate consideration. You are welcome to state your individual desires, and submit certain requests, but these are not always met. The service will always consider your needs, but you must recognize that once you have obligated yourself, your alternatives are limited to what is offered. Consequently, your freedom of choice is restricted, and you are no longer as open to change.

What the Navy tries to do is provide a fair distribution of good and bad jobs. Obviously there is a wide variety of jobs and corresponding locations, and these positions range from high in demand to almost impossible to fill. Because the Navy's manning requirements are the number one priority, every job must be filled. Hence the evolution of the Navy's detailing system. The detailer is the person whom you call when you are going to be issued orders. The detailer tells you what is available, and recommends what you should take. He is your representative for your career move, but only for that point in time. Detailers move as often as you do, and the next voice you talk to may create a very different picture and suggest a completely different approach to your situation. The reason: he has quotas and pressures of his own, and you are not the only person he is detailing. Besides, he is leaving in just a couple of years, and your particular case is relatively insignificant compared to the numbers he must deal with day in and day out. Your detailer looks at what is available, what your qualifications are, and what your record is. He then starts the process of issuing your orders. The detailer will keep in mind what types of assignments you have had. If you are due for a sea tour, he'll make sure you get one. If you have not been overseas, you

will be at the top of the list. If a tour in recruiting is open and you fit the bill, off you go. There is a method to his madness: to maintain equity among all of the players. Everyone recognizes that this is the way the system has evolved, and this is the way it works. In an ironic way, people feel they get a fair shake because of the nature of the process. For example: "Last tour I got San Diego, this time I'm on my pay-back tour in Diego Garcia." If you have a relatively decent assignment, you brace yourself for the punishment later of a pay-back tour.

The size and quality of our force is crucial. The system is seemingly driven by quota demands, with the idea that the lesser individuals will be weeded out through natural selection. The more people are recruited into this system, the more likely it is that there will be a sufficient number of essentially capable people manning this system. We recruit in mass and keep our fingers crossed that enough of the good ones will stick around.

1. Self-Selection and Flexible Incentives

We compensate with benefits other than direct salary: selective re-enlistment bonuses, variable housing allowances, sea pay, specialty pay, retirement pay, and continued education. Although patriotism somewhat motivates people to join the military, pay and benefits are also important. Special pay and benefits are offered for more critical positions to make them more attractive and to keep exceptional personnel in those positions. The Navy suffers a large monetary loss with each person it loses. A new person must be recruited, brought into service, trained, and placed accordingly.

Issues and problems in military pay haven't changed much over the years. "Military pay today is a conglomeration of current and future pay and benefits that are difficult to enumerate and even more difficult to measure and evaluate. Military pay lacks visibility. It functions as a continuous source of controversy. It is inequitable. It is inefficient in attracting and retaining desired personnel" [Ref. 6: p.60].

That was written in 1970, over sixteen years ago. We go round and round, recycling the same problems with little resolve. Tunnel vision in tackling these types of issues creates a diffusion of effort. Problems that seem to be piecemeal may represent a more fundamental defect in the system. By looking at the big picture, we may automatically lessen some of our difficulties.

Once again under attack are the compensation and incentive systems. If the system were better, we could meet supply and demand better. But how?

I propose that we revamp the system into one of self-selection. It is evident that there are good jobs, and bad ones, and good locations and bad ones. But if we have flexible and targeted incentives to go along with these, what was once prime duty to one person may become his last choice, and what was his last choice may become his first. If we adjust the compensation instead of the people, we will find a natural balance of supply and demand. We will no longer be imposing an unnatural bargaining chip, that of unquantifiable career motives as voiced by the detailers at large. The old cliché is, "money talks." If I need a job filled in Diego Garcia, and I can offer someone a 30 percent pay increase for the duration of that assignment, there may be more than enough volunteers. We can rank the jobs and locations and assign pay and allowances accordingly. Moreover, we work against our own efforts by encouraging personnel to strive for the attractive duty stations simply by paying higher living allowances at so many of them. For example, San Diego is in constant demand, but because it is considered a high cost area, we also pay a person more for living there. Why not offer less money for this prime duty station and pay more money to the person who will go to Great Lakes, even though Great Lakes is considerably more affordable? Targeted and flexible incentives, such as geographic or billet specific pays, with a system of self-selection, can be adjusted until there is a natural balance of supply and demand for Navy manning requirements.

A simple numerical example will help demonstrate the idea of flexible targeted incentives: ¹⁵

Sailor Smith will require \$20,000 annually to go to Great Lakes, but requires only \$16,000 annually to go to San Diego, or an average of \$18,000 annually for him to spend equal time in both billets. Sailor Jones will require \$23,000 to go to Great Lakes, and \$15,000 to go San Diego, or an average of \$19,000 annually for him to spend equal time in both billets. Under the current system, if the Navy wishes to retain both sailors, it must pay them each an annual salary of \$19,000 to spend equal time in both billets. But if the Navy allowed the sailors to self-select into their preferred duty, with annual salaries specific to geographic areas, the average annual salary results would be quite different. First, the two sailors are indifferent to either

¹⁵This example comes from Steve Cylke, "Toward a Voluntary Rotation and Assignment Policy," 1986. (See Reference 17). I have changed some of the numerical content, not the basic idea. In particular, Mr. Cylke uses \$18,500 as his average annual salary for both sailors to spend equal time in both billets. This would actually mean that the Navy would not retain Sailor Jones, who requires \$19,000 annually to spend equal time in both billets.

location if they receive the salaries they require. Second, assume the Navy sets salaries according to demand for the two locations; Great Lakes personnel would receive \$20,000 annually, and San Diego personnel would receive \$15,000. Sailor Smith would then choose Great Lakes because \$20,000 equals his supply price, but \$15,000 is below his supply price for San Diego. Sailor Jones would choose San Diego because it equals his supply price, while Great Lakes pays below his supply price. The average annual cost for these two areas would be \$17,500, which would save the Navy \$1,500 on each person, since the average to retain both sailors is \$19,000 under the current system [Ref. 17].

With flexible incentives, the Navy can create any type of rotation system it needs. The environment would be similar to private enterprise; the Navy would have a different type of reputation because the risk and uncertainty, and associated bad feelings, would diminish. People would have a tangible item (pay) that relates to their decisions in this area. Enlisted personnel would be able to make a clearer choice, and better attitudes should evolve. This would definitely help retention.

Area-specific pay, billet-specific proficiency pay, and enhanced sea pay are three areas we can adjust to create a self-selection program that works, and in effect create a system of "demand-driven rotation."

Currently members receive a variable housing allowance (VHA) that varies with location. High cost-of-living areas have larger VHAs, and low cost-of-living areas have smaller. But because the demand of the general population drives the cost, more popular areas are more expensive places to live. It is not surprising that the Navy often has a surplus of volunteers for popular places. By recognizing positive and negative factors of the different geographic areas in which we detail, we can create a variable geographic pay which would help balance current manning.

Paying people more money for going to a prime area is counter-productive, and that is essentially what we do. Congress voted in mid-October 1986 to freeze the VHA rates for fiscal year 1987 at the fiscal year 1986 levels. If Congress were to increase the rates to the proposed 4.9 percent, it would cost 54 million dollars. Since holding down federal spending is a major objective, this increase will probably not be approved, and any catch-up is highly unlikely. The VHA program was reworked in 1984; VHA and bachelor allowance for quarters (BAQ) were expected to cover 85 percent of the national median rental costs. Therefore on the average, service members would be responsible for approximately 15 percent of their living expenses over and

above what the allowances provide. The gap actually turned out to be about 16.5 percent. If the 4.9 percent increase had been approved by Congress, Department of Defense officials had planned to redistribute VHA funds. Those members in the areas with the greatest percentage increases in housing costs would have received more than the 4.9 percent; those in the areas with lower percentage increases would have received less than the 4.9 percent, and perhaps even reductions in their current entitlements. Many of the areas programmed for the increase are also the more popular areas, such as San Diego and Norfolk. These areas are the easiest in which to detail and also offer the most benefits. [Ref. 18: pp. 1,12] This is a good example of targeting more money to places where there is already enough incentive for people to want to go there.

Although the Navy may achieve its accession objectives, shortages usually occur in some occupational specialties. These shortages, though not always critical, sometimes degrade readiness to the point that corrective action must be taken. The Department of Defense offers an enlistment bonus as a way to attract qualified individuals into the various military specialties in which they are needed. The special pays, such as shortage specialty pay (SSP) and special duty assignment pay (SDAP), which are currently available, can be re-targeted. When jobs are seemingly impossible to fill, not necessarily because of the location but because they are less desirable than other jobs, offering a special bonus can make them more attractive. For example, Navy manpower officials are looking at the possibility of raising the special pays of nuclear-trained officers and enlisted personnel, as one way of reversing falling retention figures. Special duty assignment pay aboard submarines is paid to nuclear trained personnel and quartermasters acting as assistant navigators. Those qualified as operators get \$100 a month, and those with supervisory Navy enlisted classifications draw \$175 a month; quartermasters receive \$55 a month. The selective reenlistment bonus (SRB) is paid to most technically trained enlisted submariners and all nuclear trained submariners. The nuclear submariners are eligible for the maximum available SRB, which is currently \$30,000. [Ref. 19: pp. 1,30]

Perhaps the most crucial element for pay geared towards a program of self-selection is the enhanced sea pay system. One economist suggests the following: "To achieve a voluntary system would require a much more flexible, discretionary sea pay than now exists. But this could be easily accomplished along the lines of the current SRB system. Specifically, Congress would retain the authority to control the total sea pay budget, allowing Navy to set and adjust the specific rates within the rules and

limits specified. There are several ways to do this. One is to retain the sea pay table in its current form, but permit the Navy to adjust the specific rates to achieve voluntary manning. Another possibility is to pay a rating-specific SRB 'premium' for years spent at sea. In effect, the individual would face two bonus levels, a sea bonus and a shore bonus. The general levels of the shore and sea bonuses would drive the overall reenlistment behavior in the rating, while the differential between the shore and sea bonuses would drive the distribution between sea and shore billets. This second option has the advantage of further targeting sea pay to distributable communities, where shore and sea manning conditions may require different incentives from the Navy as a whole" [Ref. 17].

The different types of pays taken together appear very attractive. If we adopt a new compensation plan, we can create clever mechanisms to satisfy our manning requirements.

C. DECENTRALIZATION

Under homesteading, the detailing process itself would need to be completely redone. The structure of the Navy would make a dramatic change, and many of the current detailing services could be retired. We need to determine in what general direction we should move. "A central theme pervading current literature in support of national economic planning is that current policy making suffers from a serious deficiency of detailed knowledge of what is really going on in today's increasingly complex economy." [Ref. 20: P.55]. We have "decentralized knowledge," and it is difficult to organize this knowledge. Rather trying to create a centralized base, we should take advantage of the personal components of the knowledge we have at the grass roots level. Who knows better than the commanding officer of a ship or station what his personnel needs are? With a representative in the same geographic area, personnel manning requirements can be explicitly defined for that region. The detailing activity would be small by comparison under homesteading, since the constant turnover of personnel would be eliminated.

Decentralization is a natural outgrowth of the homesteading process. Some feel that current public policy planners ignore the likely consequences of their decisions because they have inadequate knowledge. We might draw the same conclusion about detailers located centrally, who have inadequate knowledge about those they are detailing, and about the places they send people. It makes good sense to provide

services right where you are stationed, rather than having to contact someone in Washington, D.C. That distance factor, coupled with the fact that a detailer in D.C. can only know so much about you and what's available where you are, make the idea of decentralization appealing. Detailing could take on a much more personal element. The pressure of filling billets to meet manning requirements would be greatly reduced. People could visit their detailers and discuss career opportunities, and assignment options. The entire process of detailing would develop into a much more humane business.

V. CONCLUSIONS

Judging from current initiatives, the concept of homesteading is a popular idea, and is considered an inducement for retention. We should capitalize on this. Many of the fears people have about a homesteading initiative can be eliminated by learning about the many issues discussed in this paper. Homesteading might then become a popular alternative to the current methods of detailing. Homesteading and permanent duty offers job continuity and expertise that current methods cannot match. It also offers stability for people, which is an unquantifiable but extremely important element. Homesteading would cost less than the current system, and the benefits of homesteading would also be greater.

By keeping any traditional system, innovation can be stifled. Unfortunately, the traditional approach to policy formulation is sometimes viewed with an "if it works don't fix it" attitude. This can be very limiting. Since the conventional system of detailing does work, there is a tremendous reluctance to change it. But is it the best method? In trying to determine the relative worth of one choice over another, some sort of comparison should be done. We could compare the impact or effectiveness of a choice with expected outcomes, with preestablished objectives, with past performances, with other choices, or with the sheer cost of a choice. The government has a tendency to rely on past performance comparisons, which can be misleading. For example, if a retention program shows a 70 percent success rate for the targeted group this past year when only the year before it had a 20 percent retention rate, one would think that this year's program was a good choice. But with a newer technique that has a retention rate of 98 percent, it does not compare well. [Ref. 21] A similar result might occur should we choose a different approach to detailing enlisted personnel. Only by institutionalizing permanent duty, can we actually compare its past performance to current methods. This is an unfortunate reality, but if we were to make the transition to such a system, the results would probably be very favorable for homesteading.

APPENDIX A

THE EPICS PROGRAM

- * "A deferred training, early at-sea assignment program appears to be attractive to general detail (GENDET) types in recruit training.
- * As of February 1983, EPICS Navy attrition rate was fifty percent less than that of the GENDET cohort and about equal to that of the FTM cohort (8%). Disenrollment from EPICS (77% total attrition) generally occurred prior to the first shore-based training investment. Total attrition of the non-school-eligible cohort is less than the school-eligible cohort, although the difference is decreasing. Attrition trends suggest that the relatively high-risk periods occur within the first 24 months. Risk level for the remainder of the program should be relatively less.
- * Transfers from the EPICS program to deck force or other ratings was 24 percent for the entire EPICS cohort.
- * FT-eligible equipment technician (ETT) students who completed instructional modules 1-25 had faster course completion time than did the FT-track BE&E group and the EPICS school-ineligible group. Those school in-eligible ETT students who completed instructional modules 1-25 also had faster course completion times than the BE&E group. These results are tempered by the fact that roughly half of the EPICS ineligible group, and about a fifth of the EPICS eligible group did not complete modules 1-25 during the 14-week ETT school but were allowed to complete the series after return to shipboard duty. Data are being collected currently to determine the final number of individuals in each subgroup who can be considered ETT graduates.
- * Supervisory ratings indicate little difference in technical assignment confidence between either EPICS cohort and "A" school graduates.
- * Job Performance Aids (JPAs) were considered helpful by fleet supervisors in aiding maintenance performance of EPICS personnel, although EPICS personnel quickly transferred to the use of maintenance requirement cards because they constituted the "peer-accepted" documentation. Further, the fully proceduralized JPAs were considered more detailed than necessary.

- * The self-teaching exportable modules (STEPS) used on shipboard were considered a useful and viable approach to competency building. However, some EPICS personnel noted the typical problem of finding time and acceptable study locations on board ship. Completion of STEPS requires self-discipline and commitment on the part of each individual; those without those attributes tended to self-select themselves out of the program.
- * The quality of shipboard administration of EPICS varied from ship to ship. Supervisory effectiveness and encouragement, particularly at the work center level, directly influenced progress made by many EPICS personnel. While the aid of the EPICS fleet representatives was useful here, variation in supervisory quality is a reality of shipboard life and requires adjustment by EPICS personnel in a self-paced instructional program.
- * Cost analyses contrasting EPICS with the current technical career path (BE&E, "A," and "C" schools) indicates a potential 30 percent cost avoidance using a deferred distributed personnel system such as EPICS. This savings might be increased further if less detailed JPAs are required. In addition, there appears to be a potential 3-1 advantage in manpower utilization by tapping the "school-ineligible" pool. These are preliminary findings, however, and require consideration of many personnel effectiveness variables before an overall cost effectiveness decision can be made.
- * Fleet feedback through commanding officer's narrative reports has been generally positive, with some recommendations for expansion of the program.
- * A transfer mechanism for implementing an R&D product the scope of EPICS within the Navy's manpower, personnel, and training institution appears to be lacking."

[Ref. 4: pp.vii-ix]

APPENDIX B

MARGINAL ENLISTED PIPELINE COSTS

Management, Consulting and Research, Inc., (MCR) conducted a study to determine the marginal costs for each of the cost elements, using fiscal year 1982 figures. [Ref. 5]. According to this study, training constitutes the largest accession pipeline cost for enlisted personnel. Training costs are divided into three categories: mission, support, and pay and allowances.

Total Navy training mission cost per accession was \$1,094 (in fiscal year 1982 dollars). This figure includes costs for recruit, apprentice, and initial skills training. Each respective training cost was calculated for instructor and other training mission costs (O&M) per accession.

Training support cost elements contain those elements which directly relate to the support of training, such as manpower costs and O&M variable costs. The total training support cost per accession for fiscal year 1982 was \$398 (\$298 manpower and \$100 O&M).

Trainee pay and allowances is the third training cost for accessions. It was figured on a six month pipeline period, which was adjusted for attrition. The elements used for the cost calculation were E-1 basic pay rates, the basic authorized allowance for subsistence (BAS) for enlisted personnel authorized to mess separately, the basic allowance for quarters (BAQ) for single E-1, and the government pay to social security (FICA). The trainee pay and allowance for each accession, based on a six month pay period, was \$4,711.

Accession non-training costs, although less than direct training costs in the aggregate, comprise a substantial portion of the pipeline budget for enlisted personnel. The non-training costs include recruiting costs, examining costs, enlistment bonus costs, personnel processing costs, permanent change of station costs, and medical and dental costs.

The recruiting costs associated with accessions are those costs attributed to recruiters, recruiting support, and recruiting advertising. These costs tend to account for over 50 percent of the budgeted non-training costs for the enlisted male pipeline accession. Fiscal year 1982 recruiting costs were \$2,018 per accession, which includes \$175 in advertising.

Examining costs includes administering physical examinations and performing evaluations of medical suitability, administering mental and vocational aptitude examinations, performing evaluations of mental suitability, and performing evaluations of administrative and moral suitability for military service of potential enlistees. The Military Enlistment Processing Command performs these tests for all services. MCR was able to calculate a per-accession marginal cost in fiscal year 1982 dollars, which was \$169.

Enlistment bonuses are used to encourage individuals to enter critical occupational specialties which require high-aptitude skills. Shortages in these areas sometimes degrade readiness to the point that bonuses are used as correctives. The elements used to determine needs in various specialties include: the total accession objectives and attainment, individual skill accession objectives and attainment, year group manning, pay grade manning, first-term manning levels, initial enlistment periods, and training investment. The bonus plans offer varying amounts depending on the the criticality of the occupations specialties included in the bonus programs. On average, for fiscal year 1982 dollars, the enlistment bonus cost per accession was \$171.

Personnel processing costs are administrative costs associated with processing recruits at recruit training installations. These costs include the processing-in of new recruits, their initial clothing issue, the out-processing of attrites, and the separation payments to attrites. Navy costs were \$70 per accession for processing-in; \$534 for initial clothing issue; \$7 for out-processing; and \$20 per accession for separation payment. This amounts to a total of \$631 in this area.

A single accession permanent change of station cost (PCS) includes all travel costs from an individual's initial military entrance to his or her first duty station. In those cases where the accession pipeline includes a school of over twenty weeks, the accession PCS stops upon arrival at the school. When an enlistee is separated from active service, a separation PCS will occur. MCR calculated a per-accession marginal cost of PCS in fiscal year 1982 dollars: \$1,103 for training to the first duty station, and \$43 for separation.

Medical and dental costs include average outpatient cost per recruit, average inpatient cost per recruit and average dental cost per recruit. These costs result in a total average variable pipeline cost of \$217.12.

APPENDIX C

EPICS COMPARISON GROUPS

- * "A cohort comprised the 139 FT-track students who had attended the Basic Electricity and Electronics (BE&E) Preparatory school in San Diego from September 1980 through August 1981. This time frame coincides with the enrollment period for EPICS personnel.
- * A stratified random sample of 516 male general detail personnel who graduated from recruit training between September 1979 and June 1980. Note that EPICS personnel were chosen from general detail recruits.

Other comparison groups included in the test and evaluation were:

- * The population of recruits who had attended the Naval Training Center, San Diego from October 1980 through September 1981. This time frame coincides with the EPICS enrollment period.
- * A group of FT-track students who attended BE&E schools at San Diego or Great Lakes between June 1981 and January 1983. This time frame corresponds with the period when EPICS personnel received equipment technician training.
- * Samples of sea-sparrow missile systems supervisors and co-workers aboard 34 ships participating in the EPICS test. The sample sizes vary according to the measure employed."

[Ref. 4: p.5]

APPENDIX D

THE STUDY APPROACH FOR PEGS

The approach of the PEGS study consisted of four major steps:

- * A set of assumptions was developed to form a "homesteading strategy" based on considerations of Navy-wide manning balance, priority manning objectives, and sea-shore rotation equilibrium.
- * A baseline data set was developed by using historical data and assignment policy tradeoffs.
- * The strategy was then used to develop a mathematical model of a rating community's personnel flows.
- * Sensitivity analysis was performed to determine the effect on the baseline model results when particular parameters take on selected values. [Ref. 7: p.1]

APPENDIX E

RESULTS OF PEGS RESEARCH

- * "In assessing the feasibility of implementing a PEGS program for the BT rating, many complexities emerge. A PEGS program should only be implemented after careful consideration of Navy assignment policy, sea-shore rotation equilibrium, maintenance of readiness through Navy-wide manning balance, and regional billet structure.
- * The regional billet structure of the BT rating demonstrates that necessity of developing different strategies for individual ratings or groups of ratings being considered for inclusion in the PEGS program. For example, due to a significant portion of BT CNO priority 2 shore billets being located outside areas conducive for 'homesteading,' payment at the front end of the program (serving in a CNO priority 2 billet outside a PEGS region) is believed to be a desirable 'homesteading strategy' for BTs. Once this priority away tour is completed, the PEGS participant receives preferential treatment; that is, an attempt is made to give him all future assignments in a previously agreed upon PEGS region. PEGS participants who do not serve in a priority away billet initially may be required to do so later in the program.
- * Using the sea-shore rotation equilibrium equations, assignment policy tradeoffs can be made among sea and shore billets, manning levels, and tour lengths. This will help maintain an overall Navy-wide manning balance. When the sea-shore billet ratios are severe, as in the case of the BT E-5/6 group, small changes in sea manning result in large changes in sea tour length. Although increasing the total manning level will lessen this effect, the importance of careful management of sea manning levels and shore tour lengths cannot be overemphasized.
- * The projected PEGS program participation is higher for pay grade group E-7--E-9 than for pay grade group E-5/6 (59% vs. 36%) for two reasons. First, since the E-5/6 group has a much more severe sea-shore billet ratio, proportionately fewer E-5/6 personnel are projected to participate at sea (58% for E-7--E-9 and 29% for E-5/6). Second, longer preferential treatment as to Navy assignment is required when one enters the program as an E-5 or E-6.

- * The sensitivity analysis showed that the model results were not very sensitive to changes in certain parameters. For example, a 25 percent change in the E-5/6 PEGS personnel loss rate, the variable that influenced the results the most, resulted in only a 10 percent change in the overall model results for the E-5/6 PEGS personnel. Differences from the baseline results occurred mostly in PEGS sea billets.”

[Ref. 7: pp.24-25]

APPENDIX F

CATEGORIES OF PCS ENTITLEMENTS

- * Mileage for privately owned vehicles.
- * Transportation by common carrier (rail, bus, air or water, including Military Airlift Command and Military Sealift Command).
- * Per diem allowance.
- * Actual and necessary expenses and cost of subsistence while in a travel status.
- * Issue of meal tickets in lieu of subsistence.
- * Travel of dependents and transportation of baggage and household goods.
- * Port handling charges for personnel, their household goods, baggage, and privately owned automobiles passing through CONUS Military Traffic Management Command terminals.
- * Payment of dislocation allowances.
- * Authorized transportation of dependents and personal and household effects of deceased military personnel.
- * Costs of contract packing, crating, handling, and temporary storage of household goods.
- * Cost of non-temporary storage of household goods.
- * Cost of trailer allowances.
- * Travel incident to organizational movements.
- * Expenses incident to PCS movement of any military group traveling under one set of orders from the same point of origin to the same destination.
- * Minor supplies and services incident to organizational PCS movements, expenses, allowances incident to separation, discharge, or release.

APPENDIX G

PCS MOVE CATEGORIES

- * **ACCESSION MOVE:** Movement from home or place of acceptance of commission to first permanent duty station.
- * **SEPARATION MOVE:** Movement from the last permanent duty station (regardless of location) to home of record (or selection).
- * **ORGANIZED UNIT MOVE:** Movement resulting from a change of homeport/homeyard of a ship or staff mobile unit or from the relocation of a shore based activity.
- * **ROTATIONAL MOVE:** Movement between permanent duty stations involving transoceanic travel when neither duty station involves an assignment to duty of more than six months or under instruction of twenty weeks or more. This includes all transoceanic travel regardless of training involvement.
- * **TRAINING MOVE:** Movement to or from a training assignment of twenty weeks or more duration at one activity that does not involve transoceanic travel.
- * **OPERATIONAL MOVE:** Movement between permanent duty stations not involving transoceanic travel when neither duty station involves an assignment to duty less than six months or duty under instruction of twenty weeks or more.

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