Improving Reserve Compensation

A Review of Current Compensation and Related Personnel and Training Readiness Issues

David W. Grissmer, Richard Buddin, Sheila Nataraj Kirby

RAND | NATIONAL DEFENSE RESEARCH INSTITUTE

The research described in this report was sponsored by the Assistant Secretary of Defense (Force Management and Personnel) and by the Assistant Secretary of Defense (Reserve Affairs). The research was conducted in the National Defense Research Institute, RAND's federally funded research and development center supported by the Office of the Secretary of Defense, Contract No. MDA903-85-C-0030.

Library of Congress Cataloging in Publication Data

Grissmer, David W. (David Waltz), 1941-

Improving reserve compensation : a review of current compensation and related personnel and training readiness issues / David W. Grissmer, Richard Buddin, Sheila Nataraj Kirby.

p. cm.

"Prepared for the Office of the Assistant Secretary of Defense/Force Management and Personnel and the Office of the Assistant Secretary of Defense (Reserve Affairs)."

"September 1989."

"R-3707-FMP/RA."

Bibliography: p.

ISBN 0-8330-0955-9

1. United States—Armed Forces—Reserves. 2. United States—Armed Forces—Pay, allowances, etc. I. Buddin, Richard J., 1951- II. Kirby, Sheila Nataraj, 1946- . III. RAND Corporation. IV. United States. Office of the Assistant Secretary of Defense/Force Management and Personnel. V. United States. Office of the Assistant Secretary of Defense (Reserve Affairs) VI. Title.

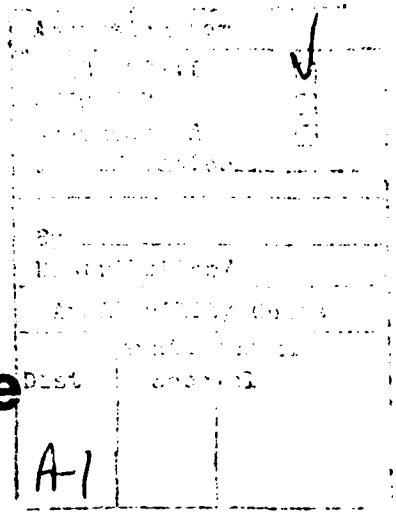
UC42.G75 1989

355.3'7'0973—dc20 89-8425

CIP

The RAND Publication Series: The Report is the principal publication documenting and transmitting RAND's major research findings and final research results. The RAND Note reports other outputs of sponsored research for general distribution. Publications of The RAND Corporation do not necessarily reflect the opinions or policies of the sponsors of RAND research.

Published by The RAND Corporation
1700 Main Street, P.O. Box 2138, Santa Monica, CA 90406-2138



R-3707-FMP/RA

Improving Reserve Compensation

A Review of Current Compensation and Related Personnel and Training Readiness Issues

David W. Grissmer, Richard Buddin, Sheila Nataraj Kirby

September 1989

Prepared for the
Assistant Secretary of Defense
(Force Management and Personnel)
Assistant Secretary of Defense
(Reserve Affairs)

RAND

PREFACE

The Sixth Quadrennial Review of Military Compensation (QRMC) was directed by the President to undertake a comprehensive review of the costs and benefits of compensation for the reserve components. The attention to reserve compensation reflects in part the growing importance of the reserve force in achieving national security objectives. The reserve force has grown faster than the active force over the last ten years, and current plans call for more reserve force growth over the next five years. The projected larger size of the reserve components and associated growing costs make this assessment of reserve compensation timely.

RAND undertook several tasks for the Sixth QRMC directed toward generating proposals for improving the reserve compensation system. This report is the first in a series documenting results of these analyses. This study lays the basis for making recommendations for changes in reserve compensation by accomplishing two objectives. The primary objective is to identify and analyze current reserve personnel and training readiness problems that may be ameliorated by changes in the reserve compensation system. The secondary objective is to provide a sound economic basis for recommending changes in compensation by presenting a theory for individual decisionmaking with respect to reserve participation and delineating the associated benefits and opportunity costs of reserve participation.

Subsequent papers will suggest proposals for changes in the reserve compensation system, provide projections of Selected Reserve personnel under different scenarios and assumptions, and describe research on predicting the retention effects of changes in various compensation elements including retirement benefits.

RAND's research on compensation issues for the Sixth QRMC is sponsored by the Assistant Secretary of Defense (Reserve Affairs) and the Assistant Secretary of Defense (Force Management and Personnel). The research is being conducted by the Defense Manpower Research Center, part of RAND's National Defense Research Institute, an OSD-sponsored federally funded research and development center.

SUMMARY

The purpose of the Sixth Quadrennial Review of Military Compensation (QRMC) was to undertake a comprehensive evaluation of the benefits and costs of all reserve compensation programs and to recommend changes to the Reserve Compensation system. A primary objective of such changes in compensation is to help solve existing problems in Selected Reserve training and personnel readiness levels. This research—sponsored by the QRMC—explores the link between Selected Reserve personnel and training readiness problems and the structure of reserve compensation. The report identifies several reserve personnel and training readiness problems that are either wholly or partly related to the way compensation is currently structured and as such are amenable to solution through changes in the reserve compensation system. A forthcoming report will provide specific recommendations for changes in reserve compensation.

From a purely economic perspective, reserve compensation needs to be structured to achieve three primary objectives:

- To provide efficiently the number of part-time individuals with the proper skill, education, and experience to meet stated manpower requirements.
- To provide sufficient incentive for individuals to work additional hours if necessary to meet training readiness requirements.
- To ensure that during mobilization and wartime, reserve personnel are available and serve sufficiently long terms that justify the peacetime training investment.

Problems in compensation structure will reveal themselves in several ways. Problems can arise from compensation levels set at too high and too low levels. Persistent shortages of personnel can be the most direct indication of low compensation—although other causes of shortages such as poor unit leadership may also be important. Failure of individuals to fulfill their required drill and annual training obligations can also be an indication of low compensation. A third area where too low compensation can produce problems is in unwillingness to provide extra working hours where needed to improve readiness. Finally, unnecessary loss of reserve personnel during periods of rising tensions due to low retention might be expected if large differences exist between peacetime civilian and military pay rates.

Compensation may also be set too high and result in inefficient use of resources that could be better devoted to improving reserve readiness in other ways, e.g., better equipment. Too high levels of compensation will be revealed by individuals working in jobs for which their productivity is insufficient to justify their additional pay. In these cases younger, less experienced and less expensive personnel can be substituted without decreasing personnel or training readiness levels. These problems can be indicated by increases in the mix of more senior personnel without corresponding changes in the requirement for senior personnel. Such judgments about seniority must take account of the cost of replacing such personnel, and differences in productivity between junior and senior personnel. As compared with the active components, however, the absolute costs of a more senior reserve force are much smaller.

PERSONNEL AND TRAINING READINESS ISSUES RELATED TO COMPENSATION

Selected Reserve personnel and training readiness issues can be categorized according to whether solutions lie with increased capital expenditures, improvements in compensation, or additional labor resources or increased nonpersonnel Operation and Maintenance (O&M) expenditures. Some of these problems are related to lack of availability of adequate equipment for training or access to adequate training facilities. These problems primarily need increased capital expenditures. Another category of problems relates to shortages of supplies, manuals, and other O&M items for which increased budgets might be necessary. Yet others are related to shortages of Military Occupational Specialty (MOS) qualified personnel either because of recruiting or retention problems or because available personnel are not trained in duty occupational skill. These can be partially ameliorated through improvements in compensation. Still other problems are related to the lack of time to plan or carry out training or to perform administrative tasks. These can be addressed through compensation system changes and perhaps a changed mix of full-time and part-time personnel.

We have identified the following problems as ones which could be ameliorated by changes in current reserve compensation.

- Personnel shortages
  - In the junior enlisted
  - In certain skills and locations
  - In larger units

  - In early-deploying units
  - Potentially in units undergoing intense training
  - Potentially during periods of crises preceding a mobilization due to income-related transition problems
- Low skill qualification levels among unit personnel
- Limited time for planning for training, actual training, and administrative work among certain types of units
- An evolving more senior force which may not justify its additional cost.

The focus in this report is primarily on the Army Selected Reserve components, although some of the issues discussed (such as limited time for planning, training and administrative work, and the rapid increase in the senior force) have wider applicability. The two Army components, the Army National Guard and the Army Reserve, now account for over 70 percent of all Selected Reserve manpower and an even greater percentage of all junior enlisted reservists. In addition, these two components tend to have the most severe problems with personnel and training readiness.

Personnel Shortages

Obtaining longer consecutive service from initial prior and nonprior service recruits should be one goal of reserve compensation initiatives. Shortages of junior enlisted personnel have been persistent over time. Data show that junior enlisted personnel have significantly higher three-year attrition rates than either junior or senior officers or senior enlisted personnel.

High levels of attrition mean that we recoup a low return on the substantial training investments required for junior personnel. High attrition levels are directly related to the demographics and aptitude of recruits, to the turbulence associated with the civilian lives of young recruits, to family and employer conflicts, to the level of net reserve pay for junior enlisted members, and to the opportunity for promotion to higher pay grades.

We believe that early attrition of junior personnel may be related to the low net return they obtain from reserve service. Our analysis of the total monetary costs of reserve participation reveals that junior personnel net less than 50 cents of each dollar of reserve pay. Most of the loss comes from forgone civilian income due to annual training and transportation costs to reserve drills. We also find that junior personnel are most at risk for losing paid overtime opportunities and wages because of reserve obligations. This indicates that improvements in

compensation for junior personnel are needed if we wish to lower attrition.

Shortages of personnel in specific skills, types of units, and geographical areas can be partly corrected through properly designed compensation initiatives. These shortages probably arise because of the lack of flexibility in reserve compensation levels to address differences in local labor markets, and because of preferences among personnel for certain skills and certain units. In the Army Reserve and Guard we find that larger units are more prone to shortages, that units with nontransferable civilian skills are harder to fill, and that there are some regional and local labor market differences in unit manning success. Research on unit readiness also shows that there appears to be little difference between early-deploying units and late-deploying units in manning and training readiness levels. It appears critical to efficiently achieving full manning for all units that increased pay differentiation be possible among units and types of skills.

Large income losses for many reservists upon mobilization should be another goal when restructuring compensation or benefits. Compensation initiatives are needed to ensure that reservists voluntarily provide sufficiently long service after mobilization to justify the long-term investment in their training. Wartime service is, after all, a primary objective for reserve training investment, and the compensation system should be structured to ensure that strong income disincentives are not present during and after mobilization.

Structuring policy intervention around this pay loss could be advocated from the viewpoint of simple equity to reserve families as well as obtaining longer and more productive service from reservists during mobilization and wartime. If not dealt with, families of reservists could encounter loss of homes, inability to deal with health crises, or other hardships at precisely the time of extended separation from spouses.

Low Occupational Qualification Levels

Training readiness requires that reserve authorizations be filled with individuals qualified in their military skill. Qualification means that the soldier can adequately perform a prescribed set of duties in a particular skill. However, MOS qualification levels for the Army components are between 70 and 80 percent for individuals in the units. Low MOS qualification rates in the Army components are much more prevalent among prior service personnel and among noncombat skills.

Low occupational qualification levels can be traced to low rates of occupational matching for prior service personnel, high turnover of personnel in units, the long process for occupational retraining, and

promotion incentives encouraging occupational movement. The rate at which reservists change skills can be illustrated by the fact that only about 50 percent of Army nonprior service personnel remain in their initial skill through their first term. For Army prior service personnel, only about 40 percent utilize their active skill upon entrance to reserve service, and after six years in the reserve only about one-quarter are in an MOS that matches their active skill.

When retraining is required in the Army components, almost all retrain through on-the-job training. Few attend active duty schools, Guard academies, or Army Reserve schools. This means that retraining can be slow and uneven in its outcome.

Some of these problems can be addressed through compensation initiatives which seek to influence choice of initial terms and units, impede certain kinds of unit transfer, reduce unit turnover, and keep individuals in occupations longer. The structure of the current pay table emphasizes promotion—which often means switching skills. Enlistment and reenlistment bonus payments also should be structured and given to individuals who achieve minimum tenure in originally trained skills.

Skill retraining is frequently associated with unit changes. In the present analysis, we could not distinguish between those changing units locally and those moving long distances. However, there is often strong incentive locally to seek other units if promotion opportunity is enhanced. If a significant part of the retraining load is generated by local moves, then these should be examined to determine if they are in the best interest of the component.

Limited Time for Planning, Training, and Administrative Work

Improving unit readiness also requires developing compensation initiatives that encourage individuals to provide additional training time. Additional training time is probably required only from selected units or individuals within a unit. Certain units have more difficult training missions that could benefit from longer training. These units might be required to participate in more intense training exercises or travel longer distances to better training facilities. Units attending training outside the United States or at the National Training Center (NTC) are examples. Others may simply need to travel longer distances to active bases or travel more frequently to field exercises.

In addition, some types of personnel within units require more time for planning for training and administrative work. Extended time could also enhance individual occupational training if increased

training opportunities allowed soldiers greater opportunity to qualify in their assigned MOS or greater opportunity to practice acquired MOS skills. Compensation initiatives should address these additional training time problems.

However, more training time without corresponding changes in compensation could lead to higher turnover and loss of key reservists. Our evidence shows that National Guard units attending the National Training Center experienced higher attrition rates than similar units undergoing normal training schedules.

More training time was required in the 12-month period preceding NTC attendance, and NTC training was for three weeks rather than the normal two-week annual training. An analysis of the first seven Guard units to attend NTC showed that attrition from the unit and from the Guard was higher among reservists participating in NTC training than among reservists in comparable units not attending NTC. For a typical reservist, the probability of leaving the unit was 25 percent higher for those in NTC units compared to non-NTC units; the probability of leaving the Guard was 21 percent higher for those in NTC units as compared to similar individuals in non-NTC units.

Some of this attrition may be unit-initiated attrition of marginal personnel in preparation for more intense training. But the study also found that all types of unit personnel—officer and enlisted—had higher attrition rates. Thus unit-wide compensation initiatives may be required.

Further evidence on attrition from extended training time comes from the 1986 Reserve Components Survey. Respondents were asked how likely they were to reenlist in the reserves under three scenarios:

- The current training schedule;
- The current schedule plus two extra four-hour drills per month; and
- The current schedule plus an additional week of annual training.

The results show that extra drills or annual training would reduce the reenlistment rates of junior grade personnel by 7 to 13 percentage points. The reservists are more adverse to two extra drills per month than to an extra week of annual training.

A Reserve Force Growing in Seniority

Projections of both officer and enlisted Reserve Forces under current policies show a much more senior force evolving over the next 15 years. The number of enlisted reserve personnel reaching retirement eligibility will almost double between FY85 and FY99. The increase in seniority is due to higher retention of post-1973 volunteer cohorts, higher reenlistment bonus payments and pay since 1980, and the influx of Vietnam veterans during the middle and late 1970s into the Reserve Forces. This increased seniority is also evident in the officer corps where an unusually large number of Vietnam era veterans with 13 to 20 years of service are approaching retirement.

These evolving more senior forces will bring increased pay and retirement outlays. Since many reservists who reach retirement eligibility continue in reserve service until 30 or more years of service, the increasing seniority will exacerbate currently perceived problems associated with much older reservists.

Problems arise with increasing seniority only when the increased pay and retirement outlays are not matched by corresponding increases in productivity. Since productivity as a function of age or experience can differ markedly by occupation, the seniority issue needs to be examined by occupation group. Older pilots and medical personnel may be valuable assets because of their experience and high replacement costs. Older infantrymen may increase costs without a corresponding increase in productivity. Potential savings exist through substitution of younger personnel for older personnel if valid measures of productivity can be developed.

EFFECTS OF RESERVE COMPENSATION

Restructuring reserve compensation to address the personnel and training readiness problems cited above requires a knowledge of the effects and role of compensation in enlisting and retaining reservists. It is clear that reserve participation offers both pecuniary and nonpecuniary benefits to those who serve and entails pecuniary and nonpecuniary opportunity costs. In this report, we attempt to delineate these reserve participation benefits and opportunity costs and to place the reserve participation decision of an individual in the broader context of the secondary labor market.

Understanding the Labor Market for Reservists

Evidence from the 1986 Reserve Components Survey shows that the overwhelming majority of both enlisted personnel and officers are employed in the civilian sector either full-time or part-time; indeed, three-quarters of reservists are holding full-time civilian jobs, in addition to their reserve participation. One important consequence of reservists holding two jobs is that nonpecuniary returns and costs play an important role in retaining reservists. Another important consequence is that reserve gross pay can be substantially reduced through taxes, fixed costs of participation, and lost civilian income. Thus, it is important to discuss reserve participation from the perspective of the secondary labor market.

Real Return to Reserve Participation

Real net returns to reserve service differ from gross reserve compensation because of the following factors:

- Federal, state, and FICA taxes
- Forgone civilian income
  - — During advanced training because the employer does not pay civilian income, requires the individual to take vacation time, or pays only the difference between civilian and military pay.
  - — During drills because of lost overtime opportunities
  - — From civilian moonlighting jobs
- Transportation costs
  - — Out-of-pocket expenses
  - — Opportunity cost of driving time
- Other costs associated with civilian pay, both monetary and nonmonetary
  - — Loss or decreased chance of promotion
  - — Unfavorable attitude of supervisors
  - — Conflicts with employer due to time demands (annual training, drills, or extra time spent on reserve work)
  - Nonmonetary costs, not related to the civilian job
  - — Family conflicts because of time demands or unfavorable impact on civilian job
  - — Forgone leisure time

Under plausible assumptions regarding those costs that could be quantified, the data show that younger enlisted personnel net less than one-half of their gross reserve income, and most of the loss comes from transportation and forgone income. The data also show that senior

officers net less than one-half of gross income, but here the primary reason is taxes. Generally, reservists "take home" between 45 to 60 percent of gross reserve income, with junior enlisted and senior officers taking home a smaller percentage. It is evident that substantial differences exist between reserve gross and net income and that these differences vary by officer/enlisted and by pay grade levels.

One can compute a net hourly wage by dividing the net annual income increase from reserve participation by the net annual increase in working hours due to participation. Comparing the net reserve wage rate with the civilian after-tax wage rate shows that reserve officers earn a higher wage rate on their reserve job than on their civilian job, whereas the reverse is true for reserve enlisted personnel, especially junior enlisted.

Other Costs Associated with Civilian Job

There are other costs attendant on reserve participation that we have not attempted to quantity. Survey data indicate that a significant number of reservists lose overtime opportunities and wages as a result of the reserve job. These data indicate that 47 percent of enlisted, but only 24 percent of officers, frequently or occasionally lose overtime opportunity/extra pay due to reserve service. Lost overtime is much more prevalent among lower ranking enlisted and officer personnel. Lower ranking personnel are also more likely to be paid wage premiums for overtime, so income losses from overtime may be a significant factor for younger personnel.

Another significant cost of reserve service can be associated with employer attitudes. Survey questions asked reservists about supervisors' attitudes toward reserve service. Approximately 15 percent of officers and enlisted personnel have supervisors with somewhat or very unfavorable attitudes. It is not clear whether this unfavorable attitude translates into loss of promotion opportunity, overtime opportunity, or simply a more unpleasant job environment.

When asked about time conflicts, respondents indicated that weekend drills cause the fewest employer conflicts when compared to absence due to annual training, extra time at reserve work, or time spent at work on reserve matters. Annual training absence seems to cause problems more frequently than extra time off or time spent on reserve affairs at work. Some employer conflicts occur for approximately 15 to 25 percent of reservists at all experience levels, and officers seem to encounter somewhat more problems than enlisted. The picture that emerges is that more senior individuals have more responsibility and time demands both from their civilian and military jobs;

however, for such individuals the overall benefits of reserve participation outweigh the costs.

Family Attitudes

Over one-third of officers encounter some family conflict because of time spent for annual training and extra time spent at reserve duty, whereas about one-fourth encounter family problems with weekend drills. Mid-level officers at the O-3 and O-4 level encounter more problems than either younger or older officers. This is particularly troublesome because these groups presumably have had a longer period of time to adjust to the demands of reserve participation. It could be related to presence of younger children.

For enlisted personnel, about one-fourth encounter family problems with annual training and extra time spent, whereas only 15 percent encounter problems with drill time. Younger enlisted personnel have more problems with annual training absence than older personnel. Although a large proportion of spouses have generally favorable attitudes toward reserve participation, between 10 to 24 percent of enlisted personnel and 8 to 15 percent of officer personnel face an unfavorable spouse attitude. Younger officers and enlisted face a higher incidence of unfavorable attitudes. Almost 25 percent of E-3 spouses have unfavorable attitudes.

To balance the long and forbidding list of monetary and nonmonetary costs facing the reservist, there is the evidence that the nonmonetary aspects of reserve service appear to be quite important in the decision to enlist and to continue. We need to emphasize that reservists, in general, appear to be motivated by more than pecuniary concerns. Several results from the 1986 Survey highlight the importance of motives such as "pride in accomplishment," "service to the country," "enjoyment of the Reserves (and/or) people in the unit," along with the more usual "current income needs" and "retirement pay." The nonmonetary aspects of reserve service appear to be quite important and should be accounted for in any discussion of overall levels of reserve compensation.

Obviously, the one major factor that has been excluded from this analysis and that undoubtedly plays an important role in attracting and retaining reservists is the existence of the retirement benefit. This makes the reserve occupation unique among other secondary occupations and it certainly adds considerably to the value of reserve service. Effects of changes in retirement will be the subject of another RAND report.

RECOMMENDATIONS

This report attempts to portray some of the personnel and training readiness issues facing the Selected Reserve today. We argue throughout the report that the reserve forces need a more flexible compensation system than the active forces because of the unique nature of reserve service and the fact that the reserve forces, unlike the active force, operate in local labor markets. Our principal recommendations for solving some of the issues raised here are:

- Restructure the basic pay table to increase rewards for longevity and proficiency within the same skill and decrease rewards for supervisory and managerial skills;
- Raise authorized levels for bonuses and rely more on bonus payments and other discretionary pay in the total reserve compensation system;
- Initiate retainer pay for reservists that would be independent of rank or years of experience; this would cover the fixed costs of reserve participation and also provide a needed pay raise for junior personnel;
- Restructure the current bonus system to place greater emphasis on term completion payments, length of time in the same skill, level of skill proficiency in reserve duty MOS at the time of enlistment (prior service enlistees), and on compensating for local unit manning conditions;
- Establish a voluntary mobilization insurance system that would provide payments based on civilian/reserve pay differentials in the event of mobilization; and
- Introduce unit-based readiness pay differentials to recognize the greater training intensity and complexity required of certain units.

We are fully aware that these compensation proposals need to be reinforced by changes in organizational structure and management to be effective. For example, we recommend that reserve unit grade and skill organizational structure be changed to allow higher pay grade attainment within the same military skill. Another recommendation is that greater differentiation be introduced in the amount of reserve training time required for different types of reserve units.

ACKNOWLEDGMENTS

We wish, first of all, to thank Col. Frank Rush, the former Director of the Sixth Quadrennial Review of Military Compensation (QRMC), both for initiating the project and for his overall guidance and substantive contributions. Colonel Rush provided immense support in all phases of the project. We also thank Col. William Warnock, the current Director of the Sixth QRMC, and his staff for their thoughtful review and useful comments.

We have relied extensively in this report on the 1986 Reserve Components Surveys of Enlisted Personnel and Officers. We wish to thank Zahava Doering and the staff of the Personnel Survey Branch at the Defense Manpower Data Center for making available the data contained in the Survey. The excellent design of this set of surveys made it possible to understand better and to address more fully several important reserve compensation issues. The complex and large-scale survey was administered in the first half of 1986, and data were made available as early as November 1986, for which we are particularly grateful.

We thank our reviewers, W. James Eddins of RAND and John Enns of Abt Associates, for their insightful and constructive reviews. We also wish to thank Mary Vaiana of RAND for her excellent editorial review; the readability of the report is considerably improved as a result of incorporating her suggestions. We are grateful to Jeanne Heller for her thorough and skillful editing. Barbara Thurston and Luetta Pope provided excellent secretarial assistance.

CONTENTS

FIGURES

TABLES

I. INTRODUCTION

There is a legal requirement for an extensive review of military compensation every four years. This review is directed toward examination of the principles of the compensation system and an evaluation of the effectiveness and efficiency of various components of military compensation in achieving the mission readiness essential to U.S. national security objectives. The review is also concerned with structuring compensation equitably for individuals who serve, while recognizing the unique nature of military service.

In 1986, the Sixth Quadrennial Review of Military Compensation (Sixth QRMC) was directed by the President to undertake this task with particular emphasis on compensation for the reserve force. The attention to reserve compensation partly reflects the growing importance of reserve forces in achieving national security objectives under the Total Force Policy and a recognition that all units in the force structure contribute to success in wartime. The reserve force has grown faster than the active force over the last ten years, and current plans call for more reserve force growth over the next five years.

This is the first QRMC to focus exclusively on reserve compensation, and past QRMCs have given only cursory attention to reserve compensation issues. However, an internal review of reserve compensation was undertaken at the direction of President Ford in 1976 within the Department of Defense in response to the precipitous decline in strength experienced by reserve forces after the transition to an All-Volunteer Force (AVF) in 1973. The Reserve Compensation System Study recommended several reserve pay initiatives that were subsequently implemented. Partly as a result of these changes, the strength of the reserve force has increased and currently stands at the highest level since the Korean War era.

The extensive and lengthy examination of elements of the active compensation system by the Fifth QRMC resulted in the implementation of significant changes in the structure of active military compensation, particularly the active military retirement system. Because active and reserve compensation are linked, some of these changes would have automatically led to changes in reserve compensation as well. However, the Fifth QRMC was unable to evaluate the effects of these changes on the reserve, so many changes in the reserve system were deferred until adequate attention could be directed to these issues.

RAND undertook several projects for the Sixth QRMC directed toward generating proposals for improving the reserve compensation system. This report is the first in a series documenting results of these analyses. Its purpose is to identify current reserve personnel and training readiness problems that may be amenable to solution through improvements in the compensation system. Other research undertaken for the QRMC includes development of models for evaluating reserve retirement options, models for projecting officer and enlisted force structure under alternative compensation and policy scenarios, and statistical models of the retention decisions of reservists using data from the 1986 Reserve Components Survey of Enlisted Personnel and Officers. These will be reported separately in companion papers. An executive summary based on these analyses will present the proposals for redesign of the reserve compensation system.

The primary motivation for changes in the compensation system arises from current and potential problems in manning and training facing the reserve forces. Previous research, annual budget justification documents, and analyses of responses to the 1986 Reserve Components Survey have identified several such issues. Some of the problems are related to the lack of availability of adequate equipment for training or access to adequate training facilities. These problems can be addressed primarily through increased capital expenditures. Other problems relate to the shortages of current supplies, manuals, and other maintenance items; increased operating and maintenance budgets are probably necessary to address these kinds of problems. This report examines only those issues that can be partially or wholly ameliorated through improvements in reserve compensation. The specific personnel and training readiness problems addressed here include:

- Personnel readiness issues:
  - Personnel shortages in local areas, in specific skills and grades;
  - An evolving more senior enlisted and officer reserve force;
  - Potential shortages prior to and during mobilizations;
- Training readiness issues:
  - Low Military Occupational Specialty (MOS) qualification levels among part-time personnel in the reserve components of the Army;
  - Potential tradeoffs between training and personnel readiness in units undergoing intense training;
  - Limited time for training and administrative work.

Before discussing these problems, we lay the groundwork for the discussion by first reviewing the current compensation system for the

reserve and its links with the compensation system for the active forces in Sec. II. Section III describes briefly the secondary labor market in which the reserve operates. Given this context, the role of compensation in an individual's reserve participation decision is then analyzed in detail. The main thesis of the report is that active and reserve forces need to structure their compensation systems to address their separate recruiting, retention, and training needs and that, therefore, selective alterations in the current linkage between the active and reserve compensation systems need to be undertaken. Problems in personnel and training readiness that can be ameliorated through changes in compensation, briefly mentioned above, are discussed in Secs. IV and V. Conclusions are presented in Sec. VI.

II. THE CURRENT RESERVE COMPENSATION SYSTEM

From the purely economic perspective, reserve compensation needs to be structured to achieve three primary objectives:

- To provide efficiently to the reserve components the labor supply of part-time individuals with the proper skill, education, and experience to meet stated manpower requirements.
- To provide sufficient incentive for individuals to work the additional hours necessary to meet training readiness requirements.
- To ensure that during mobilization and wartime reserve personnel are available and serve sufficiently long terms to justify the peacetime training investment.

Reserve compensation is an important determinant of individuals' decision to join and stay in the reserve components. Compensation needs to be set at high enough levels to produce the necessary accessions and retention levels to meet requirements for both the officer and enlisted force. One indicator of insufficient pay levels is sustained shortages of personnel.

The reserve compensation system must also recognize that training readiness objectives often require hours of work over and above the normal reserve working schedule. The structure of reserve compensation and benefits plays a key role in determining how many hours individuals are willing to work on the reserve job. Thus compensation must be structured to provide the required amount of working hours from reservists.

In addition to structuring a compensation system that meets peacetime personnel and training requirements, the reserve compensation system must recognize that reservists become active duty members during mobilization and wartime, and that both active and reserve will be paid similarly. Reservists face a potential loss of income during this period that may adversely affect an individual's family and shorten the length of service of reservists during mobilization and wartime. The compensation system needs to recognize that wartime service is the ultimate goal of reserve service, and develop transitional compensation plans that are consistent with obtaining adequate return on training investment for reservists.

This section presents an overview of the current reserve compensation system. This helps provide the necessary background for understanding some of the issues discussed later as well as sets the context for the proposed redesign of the current compensation system that will be discussed in a forthcoming report and is briefly outlined in the Conclusions.

PAY AND ALLOWANCES FOR RESERVISTS

Reserve compensation in its broadest sense encompasses both federal and state benefits and entitlements. These can be usefully categorized as follows: federal drill pay for inactive duty pay for training, federal active duty pay for training (and active duty), special federal pay, federal benefits under the Selected Reserve Incentive Program, other federal benefits, state benefits and entitlements, and reserve retirement pay.

Reservists are normally paid for two types of service—attendance at drills and attendance at annual training. Reserve drill participation typically encompasses work on two full days during one weekend a month, whereas annual training is a 14-day active duty training period.

Drill and Annual Training Pay—The Link to Active Compensation

Any linkage of active and reserve pay schedules requires somewhat arbitrary assumptions, and, in fact, any assumptions made concerning "comparable" pay levels will be controversial. Two key assumptions involve (a) how to compare a reserve and active day, and (b) how to handle benefits in the linkage. The current nominal, but somewhat arbitrary, link between active and reserve pay tables sets the daily wage of reservists on active duty for training at 1/360 of the annual basic military pay for active individuals at equivalent pay grade and years of service. This link implies that active individuals work 360 days a year rather than the more normal 260 days. Some might even argue that reservist pay should be pegged to actual active working days--a number that would be around 210 when vacation, sick leave, and holidays are eliminated. Using these lower determinators would, of course, increase the basic reserve wage rate during annual training.

Equally importantly, the current link ignores the fact that a significant amount of active compensation occurs in in-kind benefits (health benefits, housing allowances, subsistence, tax advantage, vacation, educational benefits) or in special pay (bonus payments, hazardous duty pay, etc.). Inclusion of the monetary value of these benefits in the

reserve/active link would also boost reserve wages relative to active duty pay.

Currently, for example, the pay per drill, which consists of four hours of training, is legislated to be 1/30th of the monthly basic pay of an equivalent active duty member of the uniformed services. Thus, a reservist attending four drills over two days earns pay equal to 4/30th of monthly active duty basic pay. On the other hand, the reservist earns a daily rate equal to the daily rate for active duty members during the 14-day active duty training period; this is one-half of what he earns per day for drill participation.

One explanation for the increased hourly pay rate during drills is as a counterbalance to the conservative assumptions listed above. Since reservists normally attend 24 drill days and 14 annual training days, their "effective" wage is 1.63 times the active wage rate based on 360 days. This wage rate comes much closer to compensating reservists equivalently with active personnel based on 260 days a year and including in-kind active benefits as part of the active duty pay.

This linkage assumes that reservists and active members should be similarly motivated and rewarded for years of experience and promotion. However, a pay table that would place more emphasis on years of experience may be more suited for reserve manning. It is more difficult for the reserve to achieve skill qualification, and once achieved we should attempt to retain this skill asset for longer periods. Emphasis on promotion opportunity means learning new skills and retraining more people. One way of rewarding individuals for serving longer in current skills is to adopt a pay table that has larger increments for longevity and smaller for promotion.

This is one example where linkage of active and reserve compensation may not serve the reserve well. From a purely economic viewpoint, the active and reserve should structure compensation systems that address their separate recruiting, retention, and training needs, as well as maintain the linkage necessary for transition to wartime. The structure and level of the active pay table have evolved in response to both the internally generated requirements for numbers of personnel of each skill and experience level, and the value placed on skill and experience by the external labor market from which individuals are recruited and retained. Since the reserve and active differ both in the requirements for skill and experience, and recruit from quite different labor markets, it should not be surprising that the same pay table structure cannot meet manning requirements for both active and reserve.

Linkage of active and reserve compensation—since it is both arbitrary and driven by active duty issues—should not constrain proposals

for redesign of the reserve compensation system. What is needed is a system that serves the unique needs of the reserve; any peacetime linkage with the active should take secondary consideration. However, it should be recognized that the linkage does serve several useful purposes, and should not be abandoned. These purposes include:

- Making transition into wartime pay scales for reservists easier;
- Making peacetime transition for individuals between active and reserve easy; and
- Linking annual active and reserve pay raises together in a way that simplifies the process and strengthens justification for raises.

Currently, adjustments to reserve compensation are mainly in the form of bonus payments paid at enlistment and reenlistment. These payments allow some limited flexibility in compensation to address supply shortages not accommodated by the regular pay tables. However, the amount of the bonus payment has historically been limited by Congress.

Special Pay and Allowances

Reservists are eligible for additional special pay for a variety of special skills or duties. Examples of these are incentive pay for hazardous duty, Aviation Career Incentive pay, and special duty assignment pay. Reserve medical officers are also entitled to special pay for active service. Most of the different categories of special pay are based on 1/30th of the monthly active rate.

Reservists are eligible for Basic Allowance for Quarters (BAQ) and Subsistence (BAS) during annual training and other types of special training. However, reservists without dependents do not receive BAQ during annual training, a fact that reduces the relative compensation level of junior enlisted reservists. BAS, a cash allowance to defray a portion of the cost of subsistence, is payable to officers at all times while on active duty and to enlisted personnel when rations-in-kind or government mess facilities are not available or when permission to mess separately has been granted.

BAQ provides a cash allowance to enable members to obtain civilian housing when adequate government quarters are not furnished for the member and/or his dependents. Members without dependents are also entitled to receive BAQ under similar conditions; members assigned to single-type quarters or on field or sea duty are generally eligible to a partial rate. BAQ differs by paygrade and dependency status.

Reservists are entitled to receive BAS and BAQ during their 14-day active duty training period. However, only personnel with dependents receive BAQ. For those who are eligible, the impact of these allowances varies considerably.[1] For officers, the allowances add 2 to 8 percent to basic pay. For enlisted personnel, the effects are considerably larger. An E-1, with less than two years of service, receiving both BAS and BAQ with dependents would increase his gross reserve pay by approximately 40 percent. However, for an E-7 with 10 to 12 years of service, these allowances would add about 25 percent, a smaller but still not inconsiderable increase. The main effect of these allowances (if received) is to eliminate some of the wide disparity in the daily rate earned by reservists during drills and during annual training.

Selected Reserve Incentive Program

Enlistment and reenlistment bonuses and educational assistance benefits have been in place for members of the active force for a long time. During the late 1970s, it was decided to extend such incentives to the reserve components to help alleviate some of the manning problems facing the reserve at this time.

Reenlistment bonuses were authorized by the Department of Defense Appropriation Authorization Act of 1978 for reserve members with less than ten years of service who voluntarily extended enlistments or reenlisted for a period of either three or six years in designated units or specialties.[2] The Department of Defense Authorization Act of 1986 increased the maximum bonuses payable for reenlistment as well as the amount payable for each year of completion. The current amounts for the Army components of the Selected Reserve (primary users of the program) are given in Table 2.1.

An enlistment bonus for nonprior service members was authorized by the Department of Defense Appropriation Authorization Act of 1979. This was limited to graduates of secondary school who enlisted for six years in the Selected Reserve in designated units or skills.

A reserve affiliation bonus authorized in FY1981 was aimed at encouraging those who had served or were serving on active duty, and who had or would have a military service obligation (MSO) remaining, to affiliate with a reserve unit. To be eligible for a bonus, the

[1]An added benefit is that allowances are not subject to federal income tax, whereas incentive/hazardous pay is. The key here is whether such income is called "pay" or an "allowance."

[2]As originally adopted, only those who had initially enlisted in the reserve were eligible for this bonus. This restriction was lifted the following year.

Table 2.1

HIGHLIGHTS OF THE ARMY SELECTED RESERVE INCENTIVE PROGRAM (SRIP)

Program	Criteria for Eligibility	Commitment	Amounts ($)[a]	Program Status
Enlistment Bonus	-Nonprior service (NPS) -Graduate of Secondary School -Mental Category I-III -Designated unit/skill	6 years in Selected Reserve	2000 max	Authorized thru 30 Sept 89
Prior Service Enlistment Bonus	-10 years or less service at current ETS[b] -Critical skill	3 or 6 years in Selected Reserve	2500/5000 max; DoD limit 1500/3000	Authorized thru 30 Sept 89
Reenlistment Bonus	-Designated unit/skill	3 or 6 years in Selective Reserve	2500/5000 max; DoD limit 1500/3000	
Affiliation Bonus	-Active component member with 180 days or less remaining on active duty eligible to reenlist or -MOS qualified for unit vacancy	Remainder of MSO[c] in Selected Reserve	50 per month for remaining MSO (50 max by law)	Authorized thru 30 Sept 89
Loan Repayment (SLRP) (Sec. 2171)	-Graduate of secondary school -Category I-IIIA -Enlist/reenlist or extend in reserve unit -Federal student loans[d]	NPS 6 years PS 6 years Selected Reserve PS extend/reenlist for 3 to 6 years	15 percent or $500, whichever greater, plus interest on outstanding loan balance per year of satisfactory service Maximum cumulative loans $10,000 (no legal max)	Authorized as a permanent program
Educational Assistance ("New G.I. Bill")	-Graduate of secondary school -Half-time (or greater) enrollment in approved undergraduate institutions	Enlist, reenlist, or extend for a 6-year period, after July 1, 1985	$140 per month for full-time enrollment $105 for 3/4 enrollment $70 for half-time enrollment (max $5040)	

[a]Amounts vary by service and component.
[b]Expiration of term of service.
[c]Military service obligation.
[d]Including Guaranteed Student Loan, National Direct Student Loan, Federally Insured Student Loan, and some PLUS loans.

individual had to be MOS qualified in the position for which the unit had a vacancy. The amount of the bonus is based on the number of months remaining in the MSO, and was increased in 1986 to $50 per month.

The educational assistance benefits program was substantially changed by the Authorization Act of 1985, and is now in effect an entitlement program. Eligibility was extended to reserve officers, in addition to enlisted personnel, who agreed to serve six years in addition to their current term of service. This program, the "Montgomery G.I. Bill," provides money for undergraduate programs at approved schools for a maximum of 36 months. Participants are entitled to varying amounts per month ($70 to $140) for enrollment of half-time or more. The maximum benefit is $5,040.

Another incentive program that comes under education assistance is the loan repayment program, initiated in 1981. Reservists with a high school diploma and mental aptitude I-IIIA (from the Armed Forces Qualifying Test—AFQT) enlisting for six years or reenlisting for three or six years are eligible. Under this program, 15 percent or $500 of outstanding federal student loans is paid to the lending institution for each satisfactory year of service.

A prior service enlistment bonus was authorized in 1985. It is directed toward those with less than ten years of service who enlist for three or six years in designated specialties.

These benefits are summarized in Table 2.1.

Other Federal Benefits

Benefits for members of the Selected Reserve usually include Serviceman's Group Life Insurance, military exchange privileges based on the rate of one day of post exchange/base exchange (PX/BX) privileges for each drill, monthly commissary visits, medical care for injuries incurred during drills or while traveling to and from drill, space-available air transportation, and authorized survivor benefits.

Benefits while on active duty for training include access to most military and post facilities and limited medical and dental care.

State Benefits

In addition to the pay and benefits received from the federal government for reserve service, reservists are also eligible for other benefits from states. Unlike federal pay and benefits that are uniform for all, state benefits vary a great deal. All states have laws governing base pay that National Guardsmen are to receive when called to state active

duty; however, the rates vary across states, with some paying essentially the same as the federal government and others substantially more. In addition, some states also provide per diem, subsistence, uniforms, and "out of pocket" expenses.

Additional state benefits applicable generally to reservists include:

- Tax advantages, by which a portion of military pay is exempt from state tax;
- Education benefits, under which scholarships or loans for tuition expenses at state schools are offered;
- Paid military leave;
- Workmen's compensation (usually) for periods of state active duty (Guard);
- Life insurance (Guard);
- Miscellaneous benefits such as low interest home loans, free or reduced rate license plates, and legal assistance.

RESERVE RETIREMENT

Upon completing 20 years of service a reservist may elect to transfer to the Retired Reserve; this temporarily curtails some of his benefits and privileges. However, upon reaching age 60, he becomes eligible for retired pay as well as an expanded set of benefits.[3]

A retirement system for members of the reserve components was established by the Army and Air Force Vitalization and Retirement Equalization Act of 1948. Title III of this Act provides that any member of the reserve who accumulates 20 years of satisfactory service and reaches age 60 is entitled to retired pay computed on the basis of his accumulated retirement points.

A reservist is entitled to one year of creditable service for each one-year period after 1 July 1949[4] in which he has been credited with at least 50 retirement points; these points are accrued on the following basis:

i. One point for each day of active service up to a yearly total of 365 points.
ii. One point for each day of full-time service while performing annual active duty for training or attending prescribed courses

[3]These benefits include space available medical and dental care for himself and dependents at military medical facilities, full exchange and commissary privileges, access to all base/post facilities, and eligibility for space-available air transportation. They are also authorized civilian medical care benefits for which the government pays a major portion of the cost.

[4]Service before 1 July 1949 in any of the accredited organizations (see Section 1332, Title 10, U.S. Code) automatically translates into equivalent years of creditable service.

at a service school, again subject to the yearly total limitation of 365 points.

iii. One point for each drill attended and satisfactorily performed.

iv. Fifteen points for membership in the reserve components, or the Army or Air Force without component.

v. One point for each three hours of nonresident instruction successfully completed.

vi. One point for each period of equivalent instruction or training performed in lieu of or in addition to the regularly-scheduled training assembly or drill, provided each is of four hours duration (or equal in length to the drill it replaces).

vii. One point per professional or trade convention attended, provided attendance has been approved previously.

viii. Up to 60 points for participation in Civil Defense activities.

Retirement points awarded for activities other than active or full-time service may not exceed 60 points per year of qualifying service, including the 15 membership points (item iv). A maximum of two retirement points may be earned per calendar day for any activity or combination of activities. Retirement points are credited only in the year in which they are earned.

In addition to having creditable service, a reservist must have 20 *qualifying* years of service for eligibility for retired pay. A qualifying year cannot be credited unless a minimum of 50 retirement points has been earned. Retirement points are added to the total each year, even if not enough points have been earned for a qualifying year. For retirement and qualifying year purposes, the start date is a member's anniversary date—the day the member joined the reserve component.

Reserve retired pay for a reservist in paygrade i and years of service j is computed as:

$$[(\text{Total retirement points}/360) \times 0.025] \times Y_{ij}$$

where Y_{ij}[5] = monthly basic pay for an active duty member in paygrade i and with j years of service, in effect on the retiree's 60th birthday.

Reserve retirees receive cost-of-living increases in their retired pay computed on the same basis as active duty retirees.

We have delineated above the current system of reserve compensation that determines the nominal return to reserve participation.

[5]For those entering after September 7, 1980, the formula is revised to reflect the "high three" average pay. This is the average pay over the three years of service for which the member has the highest pay. For reservists this is typically the 36 months immediately preceding age 60. The pay rate used is the rate the reservist would have received if he had been on active duty for those 36 months.

Compensation clearly is one of the most important factors entering the decision calculus of individuals making decisions about entering, continuing, or separating from the reserve. However, as the next section makes clear, there appears to be a large discrepancy between the nominal and real return to reserve participation. This discrepancy helps explain many of the reserve personnel and training readiness problems facing the reserve that are discussed later in this report. This, along with the fact that the reserve faces a competitive market for what is essentially part-time labor, forms the underpinning for our proposals for redesign of the reserve compensation system. We turn now to a characterization of the labor market in which the reserve operates and a delineation of the overall costs and benefits of reserve participation.

III. THE DECISION TO PARTICIPATE IN THE SECONDARY LABOR MARKET: COSTS AND BENEFITS OF RESERVE PARTICIPATION

To understand why reserve compensation sometimes fails to provide the necessary manpower, we need to understand the competitive labor market from which reservists are drawn. In this section we first sketch out the general characteristics of this labor market. Reserve participation is essentially a part-time occupation; the reserve forces must compete with other employers who provide more flexible hours, perhaps a better wage, and occasional overtime. The latter is generally preferred by individuals to a secondary job because it decreases search and other fixed costs while maximizing the wage rate.

GENERAL CHARACTERISTICS OF THE SECONDARY LABOR MARKET

Recent Evidence on Multiple Jobholding

In general, only a small proportion of working Americans moonlight, reflecting the preferences of both employers and labor force participants. Most employers usually fill additional time demand with overtime from current workers or hiring more full-time workers. Thus opportunities for moonlighting from many employers are limited. From the standpoint of the labor force participant, extending working hours on regular jobs is usually preferred since it minimizes job search costs and fixed costs arising from participation in a second job as well as potential conflicts between the two employers. However, for some, moonlighting is the only way to earn needed extra income. The fact that few pursue this avenue to extra income attests to its difficulty.

A special supplement to the May 1985 Current Population Survey (CPS) collected data on work schedules of Americans and on single and multiple jobholders. We present selected data from this survey, taken from a series of articles analyzing the data and presented collectively in the *Monthly Labor Review*, November 1986.[1]

[1]*Monthly Labor Review*, U.S. Department of Labor, Bureau of Labor Statistics, November 1986.

In May 1985, multiple jobholders totaled 5.7 million, 5.4 percent of all employed workers,[2] and an increase of 10.2 percent over the 1980 figure (4.9 percent). Multiple jobholders were defined as those working two jobs or more during the survey reference week, with one being a wage and salary job.[3]

Moonlighting among women has been rising since 1970, concomitant with their increasing labor force participation. The moonlighting rate for men held steady at 5.9 percent, as Table 3.1 shows. Stinson (1986) reports significant differences in the types of jobs held by the men and women who moonlight. About 40 percent of women were working at multiple *part-time* jobs, while men tended to have a full-time job in addition to the secondary job.

Some racial differences exist in moonlighting rates: whites were much more likely than blacks to moonlight. Married men were more likely to moonlight than single men or those who were widowed, divorced, or separated; the reverse was true for married women.

Table 3.2 presents multiple jobholding rates by age. Moonlighting rates increase steadily in each age group, reaching a peak among the 35–44 age group and falling off thereafter. Moonlighting appears particularly difficult for young people who are still in the process of attachment to full-time jobs and normal career movement among jobs.

The workers whose primary jobs were in professional or technical occupations were the most likely to hold two jobs. As Taylor and Sekscenski[4] point out, workers in these occupations tend to have both

Table 3.1

MULTIPLE JOBHOLDING RATES AMONG EMPLOYED PERSONS 16 AND OVER, MAY 1980–1985, BY SEX AND RACE

Year	Total Employed (000)	Multiple Jobholding Rate				
		Total	Men	Women	White	Black
1980	96,809	4.9	5.8	3.8	5.1	3.2
1985	106,878	5.4	5.9	4.7	5.7	3.2

SOURCE: Stinson (1986), Table 1, p. 23.

[2]John F. Stinson, Jr., "Moonlighting by Women Jumped to Record Highs," *Monthly Labor Review*, November 1986.

[3]Excluded from this definition are those employed in private households because working for several employers is an inherent characteristic of such work.

[4]Daniel E. Taylor and Edward S. Sekscenski, "Workers on Long Schedules, Single and Multiple Jobholders," *Monthly Labor Review*, May 1982, pp. 47–53.

Table 3.2

MULTIPLE JOBHOLDING RATES BY AGE AMONG EMPLOYED PERSONS 16 AND OVER, MAY 1985

Age	Total Employed (000)	Multiple Jobholding Rate (%)
16–19	6,289	4.6
20–24	13,857	5.6
25–34	31,246	5.7
35–44	24,446	6.2
45–54	16,682	5.1
55–64	11,545	3.8
65 and over	2,813	3.2

SOURCE: Stinson (1986), Table 2, p. 24.

relatively flexible work schedules as well as skills that are in high demand. About 8.3 percent of such workers held a second job in May 1980. Factory operatives and clerical workers were the least likely to hold second jobs, presumably because of the greater availability of overtime pay as well as the relative inflexibility of work schedules.

For men, the proportion of dual jobholders is highest among teachers both at and below the college level (20 percent in 1980, 16 to 19 percent in 1985), and among workers in the protective services (police, guards, and firefighters—9.6 and 13.9 percent for the two years, respectively). For women, the highest rates of moonlighting were among public administration officials (7.5 percent), health diagnosing occupations, and teachers and engineering and science technicians (7 percent each).

The reasons for holding a second job are primarily economic—about 41 percent reported working at a second job in order to meet regular household expenses or to pay off debts; another 13 percent were saving for the future. Reasons differed by marital status, with singles more concerned about saving for the future and those previously married citing primarily the need to meet household expenses or to pay off debts (Table 3.3).

On average, multiple jobholders usually worked about 14 hours per week on their secondary job. About two-thirds reported working less than 16 hours, whereas about 15 percent worked 25 hours or more. Combining all jobs, moonlighters averaged about 51 hours per week in May 1985.

Table 3.3

MULTIPLE JOBHOLDERS BY SEX, MARITAL STATUS, RACE, AND THE REASON FOR WORKING AT MORE THAN ONE JOB, MAY 1985

Characteristic	Total (thousands)	Percent Distribution by Reason					
		Total	To Meet Regular Household Expenses	To Pay Off Debts	To Save for the Future	To Get Experience or Build Up a Business	Other Reason
Total 16 years and over	5,730	100.0	31.6	9.3	13.0	17.0	29.2
Men, 16 years and over	3,537	100.0	30.3	9.0	12.9	18.1	29.7
Single	767	100.0	20.7	10.4	21.5	19.5	27.9
Married, spouse present	2,447	100.0	33.4	7.6	11.0	18.0	30.1
Widowed, divorced, or separated	323	100.0	29.2	17.0	7.2	15.4	31.1
White	3,291	100.0	29.4	9.1	12.8	18.4	30.3
Black	187	100.0	45.6	10.6	12.8	11.1	20.0
Women, 16 years and over	2,192	100.0	33.7	9.7	13.1	15.3	28.2
Single	681	100.0	28.5	8.7	22.1	14.1	26.6
Married, spouse present	1,001	100.0	27.2	7.8	10.6	20.1	34.2
Widowed, divorced, or separated	510	100.0	53.5	14.8	6.0	7.0	18.8
White	1,995	100.0	33.3	8.9	12.9	15.7	29.2
Black	151	100.0	40.1	19.7	16.3	5.4	18.4

The median weekly earnings for *all* secondary jobs was $343 in May 1985, although women earned substantially less than average ($241) compared to men ($450). The weekly earnings for blacks was $305, somewhat below the average for whites ($344). However, when one considers only second jobs, the median weekly earnings is approximately $70 in May 1985. About 60 percent earned less than $100 per week, 25 percent earned between $100–$200 and another 13 percent reported earnings of over $200 per week. Black moonlighters tend to work greater hours at their second job; consequently, their median earnings was $81 per week compared to $69 for whites.

Recent Evidence on the Prevalence of Overtime Work

We next present evidence on the prevalence of overtime work and flexible work schedules, both of which have an impact on the willingness and availability of individuals to participate in the secondary labor market. This evidence is important in that we show later that reservists, particularly those in the junior paygrades, suffer monetary costs in terms of forgone overtime opportunities.

Firms use overtime to alleviate "disequilibrium conditions" such as a sudden increase in demand, high rate of absences, or other unanticipated events.[5] If the cost of paying for overtime, generally including a premium wage rate, is less than the recruiting, training, and hiring of additional workers, overtime may be regularly scheduled. On the other hand, a firm's demand for moonlighters usually is a demand for part-time (and generally relatively low-cost) labor.

The standard work week is still five days/40 hours per week. However, there were 10.5 million persons reporting overtime work in May 1985. They worked an average of nine hours at time-and-one-half rates. Not all of these workers worked 40 hours per week, however. In some industries, workers are paid overtime for working more than a set number of hours per day; in others, the standard full-time work week is less than 40 hours. Table 3.4 shows the proportion of wage and salary workers receiving some overtime pay by number of hours worked.

The three-fifths of workers with long work weeks not receiving overtime pay are mostly in managerial, professional, or technical occupations not covered by the Fair Labor Standards Act of 1938.

If we examine the profile of persons working overtime for premium wages, we find that the highest proportion lies in the 35–44 year age group. Men are more likely to work overtime than women, as are

[5]See Taylor and Sekscenski (1982); and Darell E. Carr, "Overtime Work: An Expanded View," *Monthly Labor Review*, November 1986, pp. 36–39.

Table 3.4

WAGE AND SALARY WORKERS RECEIVING OVERTIME PAY BY HOURS WORKED

Hours Worked (Jobs Held)	Number (000)	Percent Receiving Overtime Pay
40 hours or fewer	66,506	2.4
41 hours or more	24,386	36.6
(Had one job only)	21,421	39.3
(Had two or more jobs)	2,965	17.2
Total	90,892	11.6

SOURCE: Carr (1986), p. 39.

whites. Married men are more likely to work overtime than single men; for women, the reverse is true (Table 3.5).

Among the various occupational groups (Table 3.6), as expected, the highest proportion of workers reporting paid overtime was in the precision production, craft, and repair group (21.9 percent), followed closely by the operators, fabricators, and laborers group (20.7 percent). When one looks at the industry breakdown, mining, manufacturing, and construction accounted for the major share of overtime work.

While earlier data on 1980 do not allow straightforward comparisons, there is some evidence to suggest that the trends and magnitude of overtime work have remained fairly constant over this period.

Shift Work, Flexitime, and Alternate Work Schedules[6]

Flexibility in working hours on the civilian job clearly makes reserve service easier. On the other hand, nonstandard working hours such as weekend work or shift work may make reserve service harder. Smith (1986) highlights the predominance of the standard five-day, 40-hour week but emphasizes that there have been some changes over the last few years with a growing number reporting either "compressed" full-time work schedules (less than five days) or extended schedules (six to seven days). Mellor (1986) reports that one of eight full-time workers were on flexible work schedules that allowed them to vary the start and end of their work day. About 16 percent of all full-time wage and salary workers are on "shift" work—evening, rotating, night, or split

[6]Shirley J. Smith, "The Growing Diversity of Work Schedules," *Monthly Labor Review*, November 1986; and Earl F. Mellor, "Shift Work and Flexitime: How Prevalent Are They?" *Monthly Labor Review*, November 1986, pp. 7-21.

Table 3.5

WAGE AND SALARY WORKERS RECEIVING OVERTIME PAY, BY SELECTED CHARACTERISTICS

Characteristic	Number (000)	Percent Receiving Overtime Pay
Age		
16–24	18,869	11.3
25–34	27,345	14.2
35–44	20,354	11.3
45–54	13,451	10.0
55 and over	10,873	7.8
Sex and marital status		
Men	49,449	15.0
Single	13,308	12.0
Married, spouse present	31,658	16.1
Widowed, divorced, or separated	4,484	16.3
Women	41,443	7.5
Single	10,777	7.3
Married, spouse present	22,314	6.7
Widowed, divorced, or separated	8,352	10.0
Race		
White	78,765	11.9
Black	9,640	9.8
Hispanic	5,842	10.7
Total, 16 years and over	90,892	11.6

SOURCE: Carr (1986), Table 1, p. 37.

shifts. Men were more likely than women to be shift workers as were blacks and younger workers. Among occupational groups, the highest proportions of shift work occurred among protective services and health services; mining, manufacturing, retail trade, and the service sector ranked highest among industry groups.

Reserve Participation as a Part-time Occupation

There is overwhelming evidence that reserve participation is essentially a part-time occupation. Table 3.7 shows, based on the 1986 Reserve Components Survey, that the overwhelming majority of both

Table 3.6

WAGE AND SALARY WORKERS RECEIVING OVERTIME PAY, BY OCCUPATION AND INDUSTRY, MAY 1985

Occupation and Industry	Number (000)	Percent Receiving Overtime Pay
Occupation		
Managerial and professional specialty	21,265	6.0
Technical, sales, and administrative support	28,421	9.5
Service occupations	12,607	6.2
Precision production, craft, and repair	11,130	21.9
Operations, fabricators, and laborers	15,474	20.7
Farming, forestry, and fishing	1,995	6.2
Industry		
Agriculture	1,557	5.7
Private nonagricultural industries	73,544	12.8
Mining	913	27.8
Construction	4,789	15.8
Manufacturing	19,407	20.0
Transportation and public utilities	5,458	16.0
Wholesale and retail trade	18,611	10.6
Finance, insurance, and real estate	5,708	6.8
Services	18,620	7.1
Government	15,791	6.3

enlisted personnel and officers are employed in the civilian sector either full-time or part-time. Indeed, the table makes evident that three-quarters of reservists are holding full-time civilian jobs, in addition to their reserve participation.

The 1986 survey also asked respondents about their civilian occupation and to categorize their employer according to public versus private sector and relative size of organization. The summary results are presented in Tables 3.8 and 3.9.

The tables show that enlisted personnel are drawn from a wide variety of occupations, with officers generally showing more clustering around the managerial, professional, and administrative specialties. There also appear to be some difference between enlisted personnel and officers in type of employer. For example, over a third of the officers are employed in the public sector and a third are employed by large private sector firms. On the other hand, the corresponding numbers for the enlisted are smaller, at 27 percent each.

As we said earlier, it is important to place reserve participation in the broader context of the secondary labor market. Reserve participation, after all, is but *one* of the several options open to those interested in multiple jobholding, albeit more attractive to those with certain characteristics or in certain primary occupations. The fact that the reserve is but one of many employers competing for labor in the secondary job market is important; it helps emphasize that policies aimed at improving reserve recruiting and retention need to be structured carefully to take account of current and future economic conditions. For example, there is some evidence to show that the youth cohort size will become increasingly smaller and the tightness in the youth labor market combined with the increased demand from the service sector will produce increasing competition for such workers (Lilliard and Macunovich, 1988).[7] There is also evidence that the edge that military wages have enjoyed relative to civilian wages will gradually be eroded over time; if these trends are true for part-time wages as well, then the recruiting environment will become much more difficult for the military.

We turn now to an examination of the reserve participation decision and the costs and benefits associated with reserve participation that are likely to enter the decision calculus.

Table 3.7

CURRENT EMPLOYMENT STATUS OF PART-TIME RESERVE MEMBERS, 1985

	All Reserve Components	
Civilian Employment Status	Enlisted (Percent of Total)	Officers (Percent of Total)
Full-time job	73	80
Part-time job	10	6
Self-employed	3	7
Unemployed	7	2
Not in labor force	6	5

SOURCE: 1986 Reserve Components Survey, Q.3, 93M.

[7]Lee A. Lilliard and Diane M. Macunovich, internal study on the changing economic structure and youth labor markets, The RAND Corporation.

Table 3.8

CIVILIAN OCCUPATION OF PART-TIME RESERVE MEMBERS, 1985

Civilian Occupation	All Reserve Components	
	Enlisted (Percent of Total)	Officers (Percent of Total)
Managerial and professional specialty	15	68
Technical, sales, and administrative support	22	20
Service occupations	17	—
Precision production, craft and repair[a]	32	12[b]
Operators, fabricators, and laborers	14	—

SOURCE: 1986 Reserve Components Survey, Q.3, 96b.

[a]Includes farming and mining.

[b]Includes craft, production, and labor. The reported summaries do not permit further disaggregation.

THE DECISION TO PARTICIPATE IN THE RESERVE[8]

The fundamental tenet of moonlighting labor market theory is that individuals or households make systematic assessments of the likely net monetary and nonmonetary benefits from moonlighting and make systematic decisions throughout their careers to enter, stay, or leave a moonlighting occupation. There are four distinct components in making this assessment for reservists. They are:

- The present and future monetary benefits from reserve service;
- The nonmonetary benefits of reserve service;
- The monetary opportunity costs from reserve service; and
- The nonmonetary opportunity costs of reserve service.

Presumably reservists will join and stay in the reserve only if the long-term monetary and nonmonetary benefits of reserve service

[8]Throughout the remaining section, we use the term "moonlighting" to represent part-time occupations that are held in addition to the primary one. The term is a technical one and is widely recognized in the economic literature. There is no derogatory connotation to the term.

exceed the monetary and nonmonetary opportunity costs associated with alternative uses of their time. We examine below evidence concerning the actual monetary and nonmonetary benefits of reserve service as well as the monetary and nonmonetary opportunity costs associated with reserve service.

In general, reserve wage rates must be set to attract the marginal individual at each grade and rank into the reserve. The marginal individual will most likely be someone who holds a full-time job and has a family. For these individuals the opportunity costs will probably be greatest.

Another way of expressing this concept is to posit a moonlighting reservation wage, that is, the wage necessary to attract an individual into the moonlighting job. Presumably, the higher the opportunity costs associated with moonlighting, the higher will be the reservation wage. This reservation wage might be either above or below what individuals earn on their regular civilian jobs. Individuals who are working may accept lower moonlighting wages than their civilian job if income needs are strong, leisure time is not highly valued, or no opportunity is available for additional paid working hours on civilian jobs. For individuals with weaker income needs, high value for leisure time, or

Table 3.9

EMPLOYER BY TYPE AND SIZE: PART-TIME RESERVE MEMBERS, 1985

	All Reserve Components	
Type of Employer	Enlisted (Percent of Total)	Officers (Percent of Total)
Public sector		
Federal government	10	14
State government	8	11
Local government	9	10
Private sector		
Firm < 500 employees	35	20
Firm ≥ 500 employees	27	33
Self-employed/family business	11	11

SOURCE: 1986 Reserve Components Survey, Q.3, 97.

frequent paid overtime opportunity on civilian jobs, moonlighting wages above civilian wages may be required. Individuals who are unemployed may be willing to work at rates less than their last civilian wage. However, for those receiving unemployment benefits, moonlighting wages can partially substitute for these benefits, and reduce the incentive to participate.

Monetary Benefits of Reserve Service

The monetary benefits include the stream of likely *net* income resulting from moonlighting. Net income rather than gross income should be used since moonlighting income can be substantially reduced through payment of taxes at marginal rates and certain fixed costs of participation such as transportation. The gross monetary benefits include present reserve pay and expected future pay, taking account of likely promotion opportunities and retirement benefits. Secondary job security also needs to be taken into account, by including the likelihood of steady employment and income. Here we concentrate on estimating annual net reserve income. Our focus here is on present income, rather than the more correct measure, the sum of present and future income. There are two reasons for this: first, there are unresolved difficulties in computing the present value of future retirement benefits in terms of discount rates, and second, more importantly, we wished to maintain comparability between our civilian and reserve pay measures and we have no data on the retirement benefits associated with the reservist's civilian job.

Estimating Gross and Net Annual Income from Reserve Service. Gross reserve income is the annual income received by the reservists for his participation in drills and annual training. It is specified by the reserve pay tables. The components of reserve pay and allowances were outlined in the previous section. Net reserve income subtracts from gross pay the following:

- Federal, state, and FICA taxes;
- Forgone civilian income resulting from attendance at annual training;
- Transportation costs to reserve drills and annual training; and
- Value of the time spent in traveling to drills and annual training.

Individual decisions to join or stay in the reserve will be made on the basis of net—not gross—income. This difference would be relatively unimportant if there were not substantial differences among reservists in the ratio of net to gross income. In fact, the higher

percentage differences between net and gross income of junior personnel helps explain their supply shortages.

We estimate both gross and net income gained from reserve participation for typical reserve officers and enlisted personnel. We assume standard annual participation of 48 drills and 14 days of annual training. Figure 3.1 shows gross income by pay grade for 1985 for standard participation.[9]

Forgone Civilian Income. Forgone civilian income has been calculated using civilian weekly wages and the civilian employer policy for annual training. Table 3.10 shows the employer pay policies for reservists during military leave. Approximately 28 percent of enlisted and 43 percent of officers receive full civilian wages while attending annual training and suffer no forgone income. Reservists who work for the public sector and large civilian employers account for most of those receiving full wages.

All reservists not receiving full civilian wages will have some forgone income. Some employers have a policy of reimbursing the difference between civilian and reserve wages. This category accounts for 15 percent of enlisted and 13 percent of officers. Forgone civilian income in this case equals the reserve annual training pay. The remaining employed reservists receive no civilian income and forgone income equals their normal civilian income for the two-week period during annual training. This category accounts for 47 percent of enlisted and 34 percent of officers. For unemployed reservists, forgone income is assumed to be zero.

Figure 3.2 shows the average forgone income for both enlisted personnel and officers. Enlisted personnel lose between $400 to $525 annually from civilian paychecks while attending annual training. For the enlisted ranks, junior personnel lose almost as much as senior personnel in absolute terms. Since senior personnel have significantly higher civilian income, one might expect senior personnel to lose significantly more from annual training. However, this higher income is balanced by the much higher probability of senior personnel receiving partial or full wages from employers. An E-9 has a 56 percent chance

[9]It is important to note that the tables in this and following sections are not based on the entire survey sample. First, we excluded all full-time personnel and those falling into special categories because these are not representative of the typical part-time reservist. Second, reservists with less than one full year of service (primarily those in paygrades E-1 and E-2) were excluded—these individuals have not had sufficient experience with what reserve participation entails. Third, reservists whose responses indicated drill and annual training schedules that were markedly different from the norm were excluded. Fourth, individuals with missing responses to specific questions were excluded from the relevant tables. Thus, the totals and proportions shown here differ from other published tabulations and frequently across tables as well.

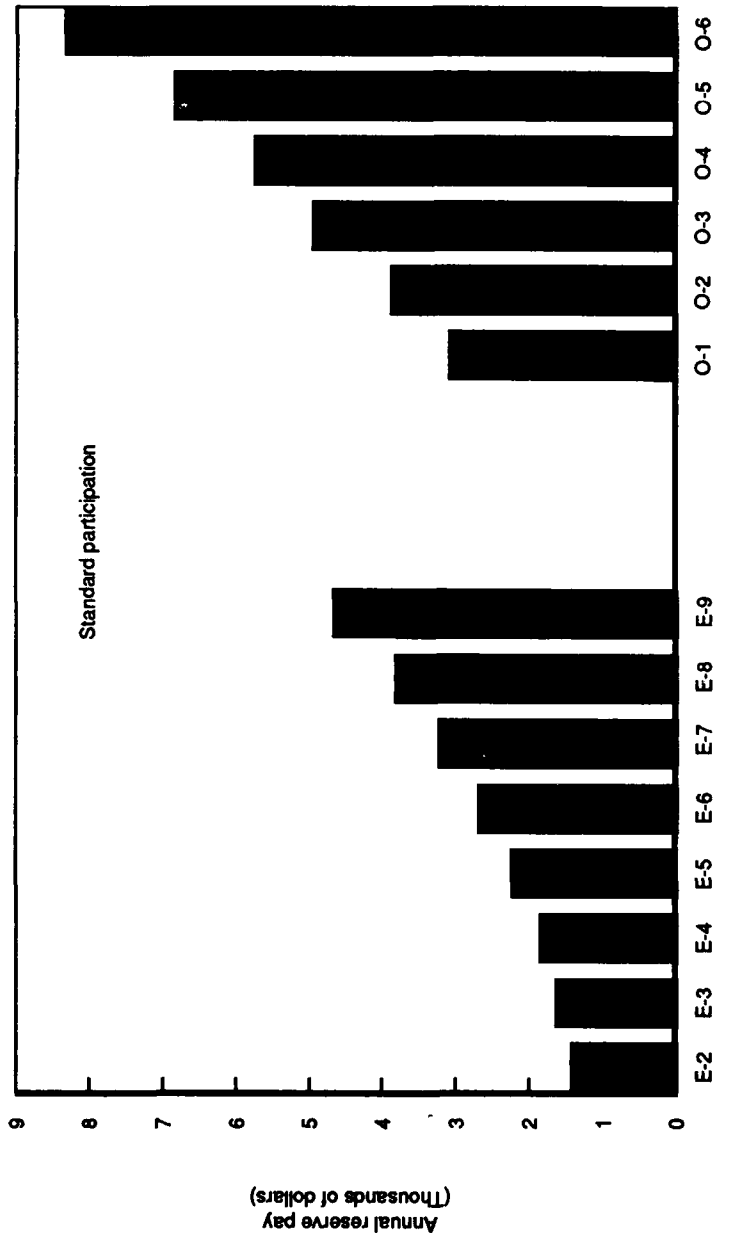


Fig. 3.1—Gross annual reserve income

Table 3.10

CIVILIAN PAY STATUS FOR ANNUAL TRAINING

Question: Which of the following describes how you were paid for the time you took from your civilian job for Guard/Reserve obligations?

Grade	Full Civilian Pay + Military (%)	Partial Civilian Pay + Military (%)	Only Military Pay (%)	Served on Days I Didn't Work (%)	Total
Enlisted					
E-3	10.9	8.3	68.9	11.9	10,730
E-4	15.5	10.7	62.0	11.8	92,232
E-5	26.6	15.7	48.7	9.0	108,991
E-6	36.3	18.2	37.9	7.6	83,371
E-7	44.2	20.0	28.5	7.3	37,006
E-8	46.3	18.1	28.8	6.8	11,064
E-9	55.6	16.6	22.7	5.1	3,208
Total	28.2	15.3	47.3	9.2	347,855
Officer					
O-1	23.9	8.4	53.8	13.9	4,202
O-2	34.9	11.1	42.8	11.2	6,800
O-3	40.8	13.7	36.5	9.0	16,497
O-4	46.1	13.4	29.3	11.2	17,699
O-5	52.3	12.6	26.6	8.5	7,927
O-6	64.1	8.6	18.7	8.6	2,856
Total	43.3	12.5	34.0	10.2	55,981

SOURCE: 1986 Reserve Components Survey, Q.107.

of receiving full wages, whereas an E-2 has only an 8 percent chance. This higher propensity reflects both a self-selection of retained reservists who have better employer policies as well as a higher probability that older individuals will work for government or large employers with more liberal policies.

The results for officers are influenced more by the income effect: forgone income rises with rank. O-1 and O-2 ranks lose amounts similar to enlisted personnel. However, higher ranking officers lose significantly more, with O-6s losing about $1,200 in civilian income. This is despite the fact that senior officers—like senior enlisted personnel—have a much higher probability of receiving full pay during annual training.

Transportation Costs. Transportation costs have two components: actual "out-of-pocket" expenses and the opportunity costs of driving time. Out-of-pocket costs were calculated using actual driving mileage and Internal Revenue Service driving costs of 22¢ a mile. We

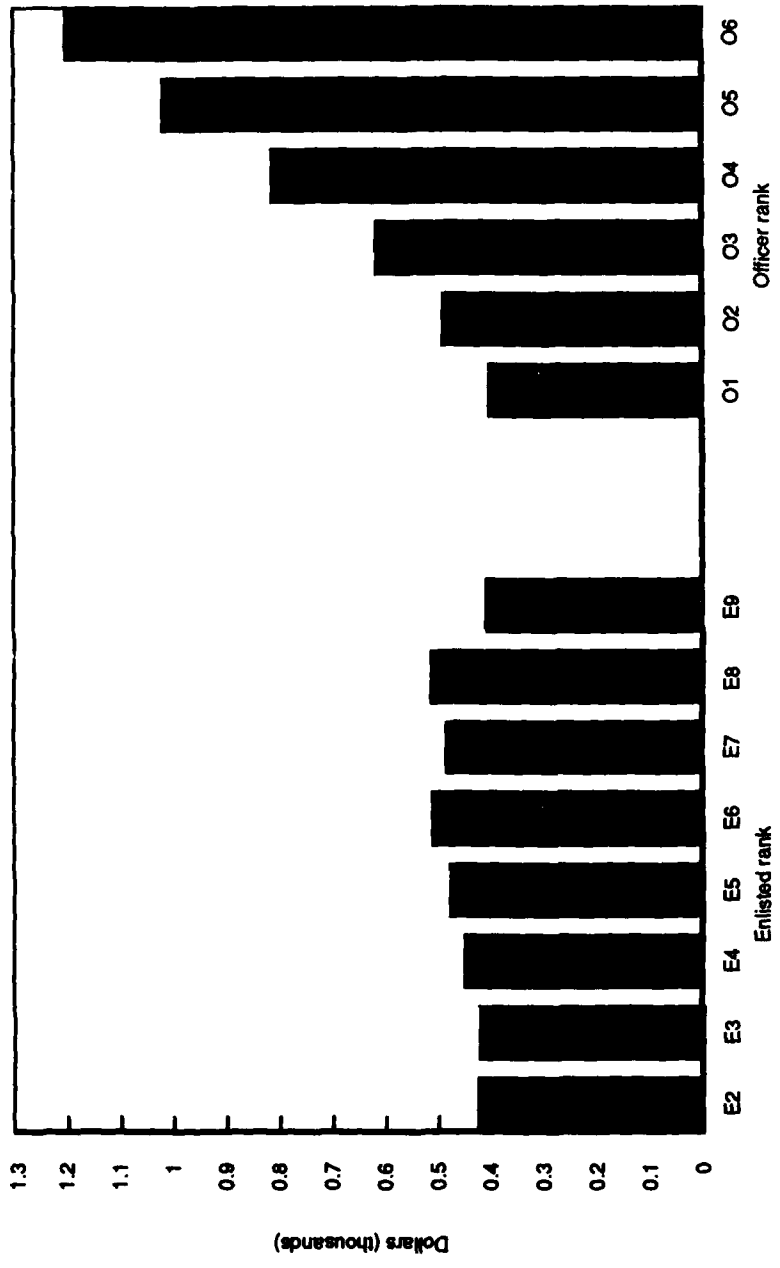


Fig. 3.2—Forgone civilian income

assume reservists make two round trips for 11 drill weekends and one round trip for a combined annual training and drill weekend. The results (Fig. 3.3) show that annual transportation costs range between $100 and $200 for reservists, with a tendency for officers and more senior enlisted personnel to have greater transportation costs. One explanation for the tendency of senior enlisted and officers to travel further to drills is again a self-selection process. Junior personnel who live further away may leave if high transportation costs cause net reserve wages to fall below their reservation wage.

The second component of transportation costs involves the value reservists place on their driving time. For most reservists, driving time does not substitute for income earning activity, but rather for leisure time. We have assumed here that driving time is valued at one-quarter of civilian hourly wage. The results (Fig. 3.4) show that time costs are between $40 and $140 for enlisted personnel and $60 to $300 for officers. Time costs rise with rank because of higher civilian income for more senior personnel.

We have combined forgone income and transportation costs to estimate a "fixed cost" associated with reserve participation (Fig. 3.5). These costs represent real reductions in gross income or opportunity time costs resulting from the reserve participation decision. These costs are shown in Fig. 3.6 as a percentage of gross reserve pay and in Fig. 3.7 as a percentage of after-tax reserve pay. The results show that the fixed costs of participation amount to 45¢ of each after-tax dollar for E-2 reservists, but only 23¢ for E-9 reservists. For officers, fixed costs are between 25¢ to 30¢ of each after-tax dollar.

Taxes on Reserve Income. We have estimated taxes on reserve income, by using civilian income data from the 1986 Survey of Reserve Personnel and by assuming that marginal income from reserve service is taxed at the appropriate marginal tax rate for 1985.[10] For federal taxes we have assumed that marginal tax rates for reservists are similar to the average American with similar income. We have used Department of Treasury data providing actual marginal tax rates by income level. For state taxes, we have used state specific marginal income tax rates. For FICA taxes,[11] we have used the appropriate tax rate and maximum income level for 1985. Figure 3.8 shows the components of reserve gross and net annual income.

[10]We assume here that reserve earnings are taxed at the marginal (i.e., higher) tax rate. If workers simultaneously choose full-time and part-time employment, then one cannot assume that the reserve job is the "marginal" one. The effect of this would be essentially to lower the effective tax rate on reserve income, thereby increasing net reserve income.

[11]FICA taxes were not assessed against reserve compensation until January 1, 1988. We have included them here to make our compensation estimates apply to future income.

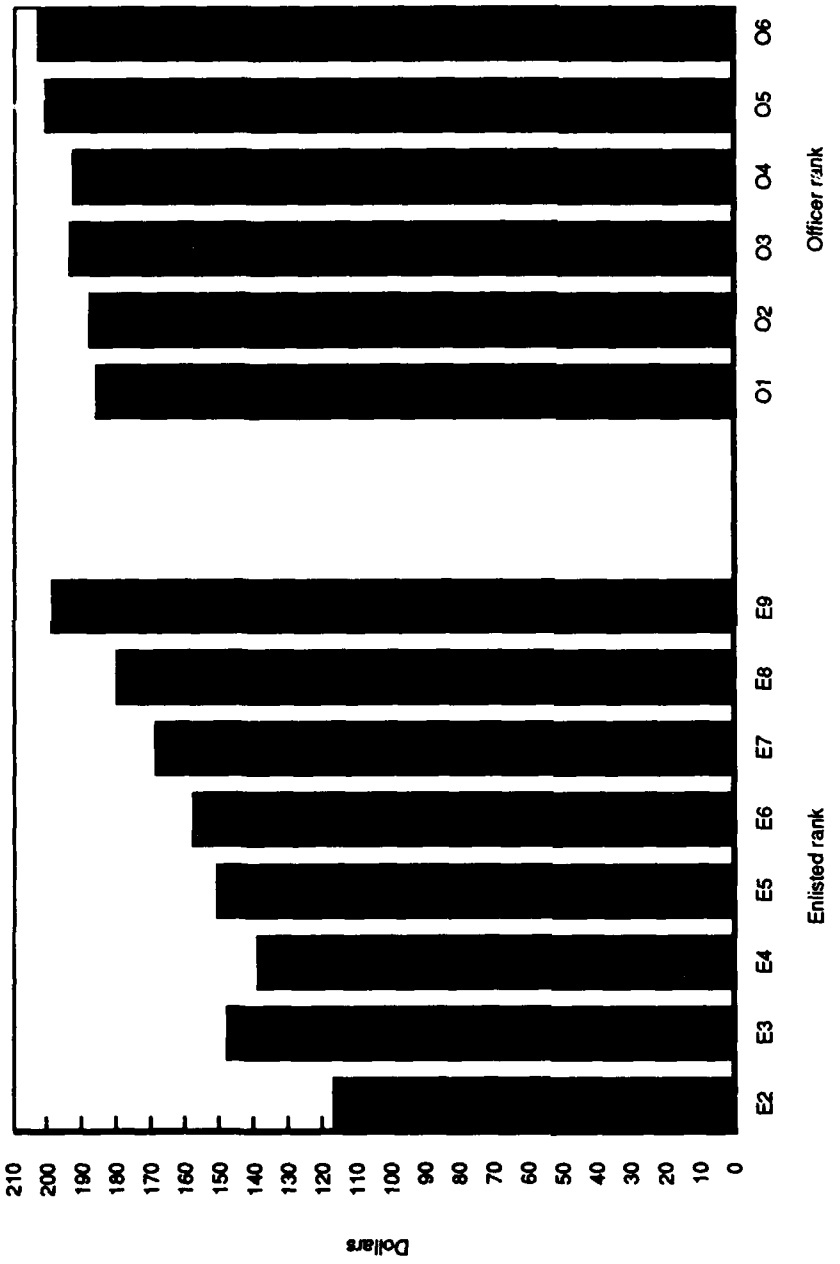


Fig. 3.3—Annual driving costs

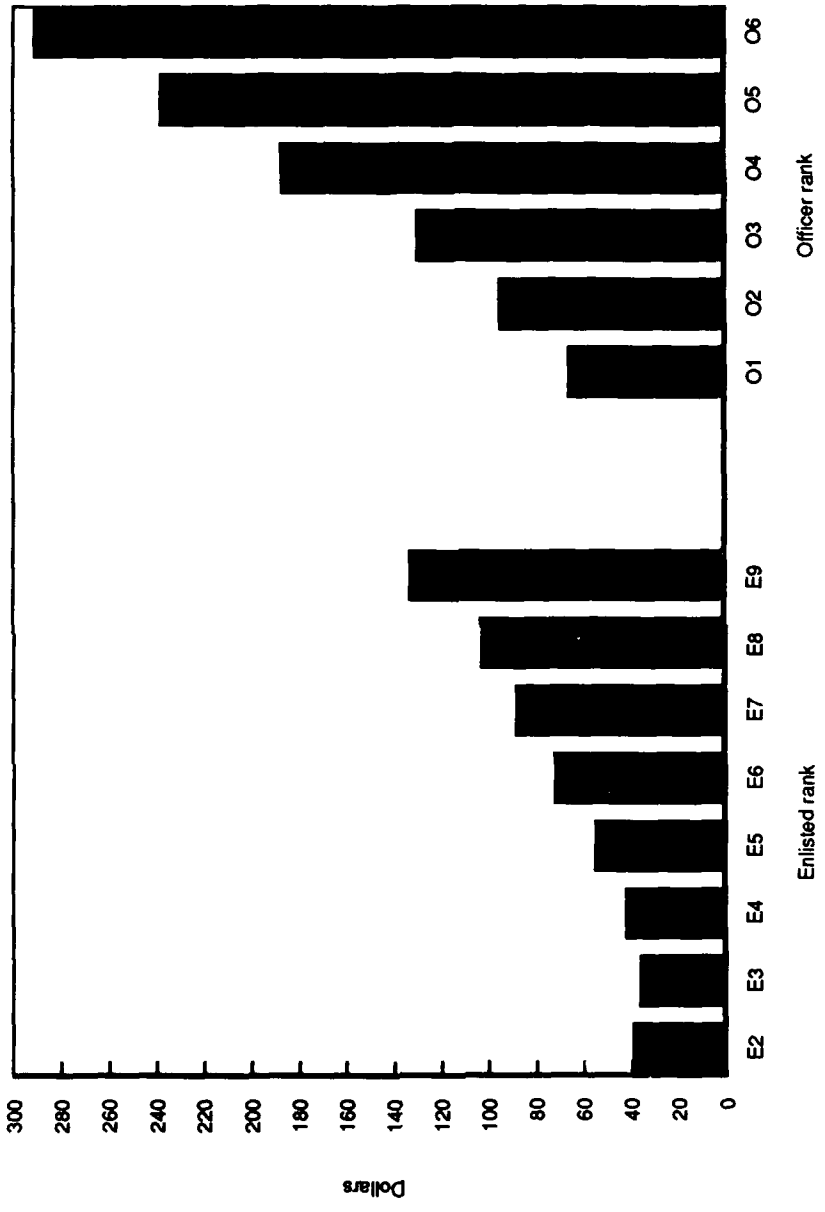


Fig. 3.4—Annual driving time costs

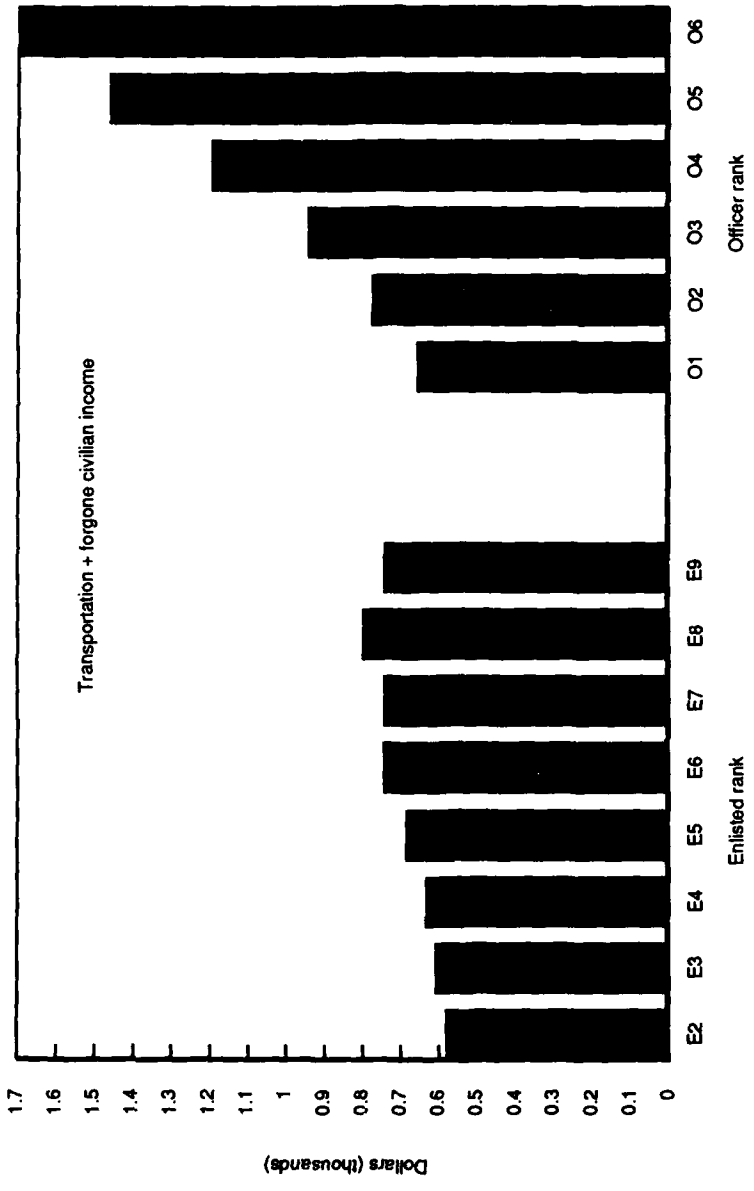


Fig. 3.5—Fixed costs of reserve participation

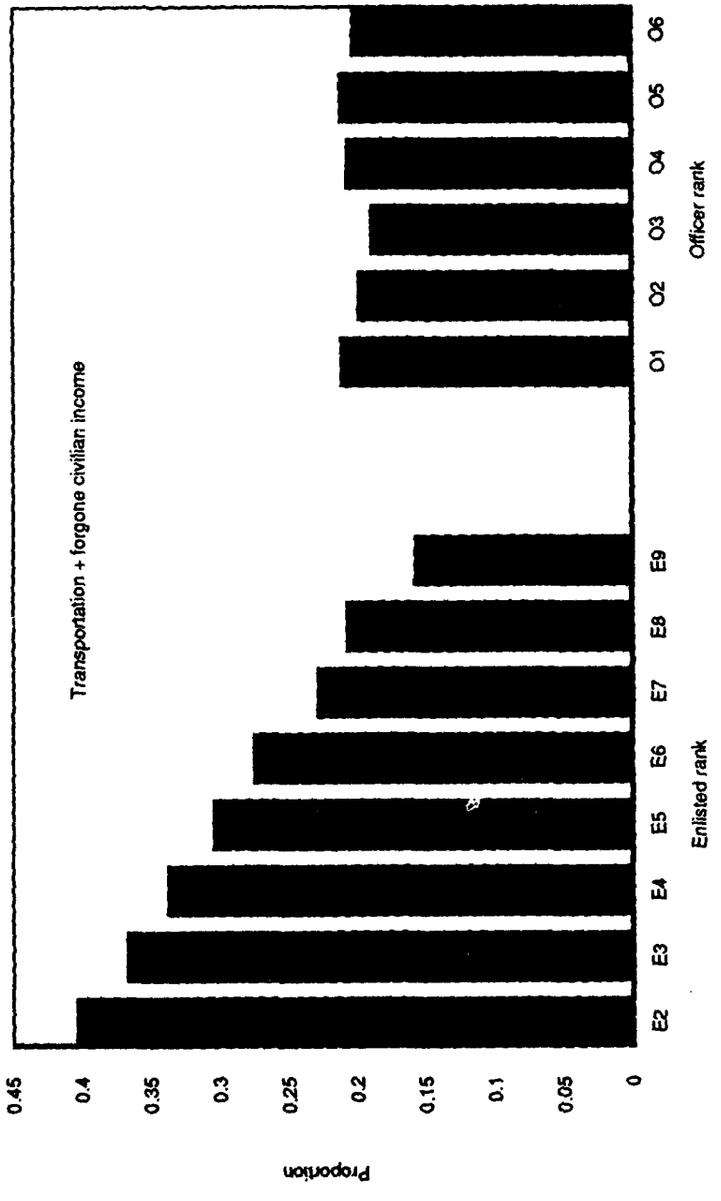


Fig. 3.6—Fixed costs as proportion of pay

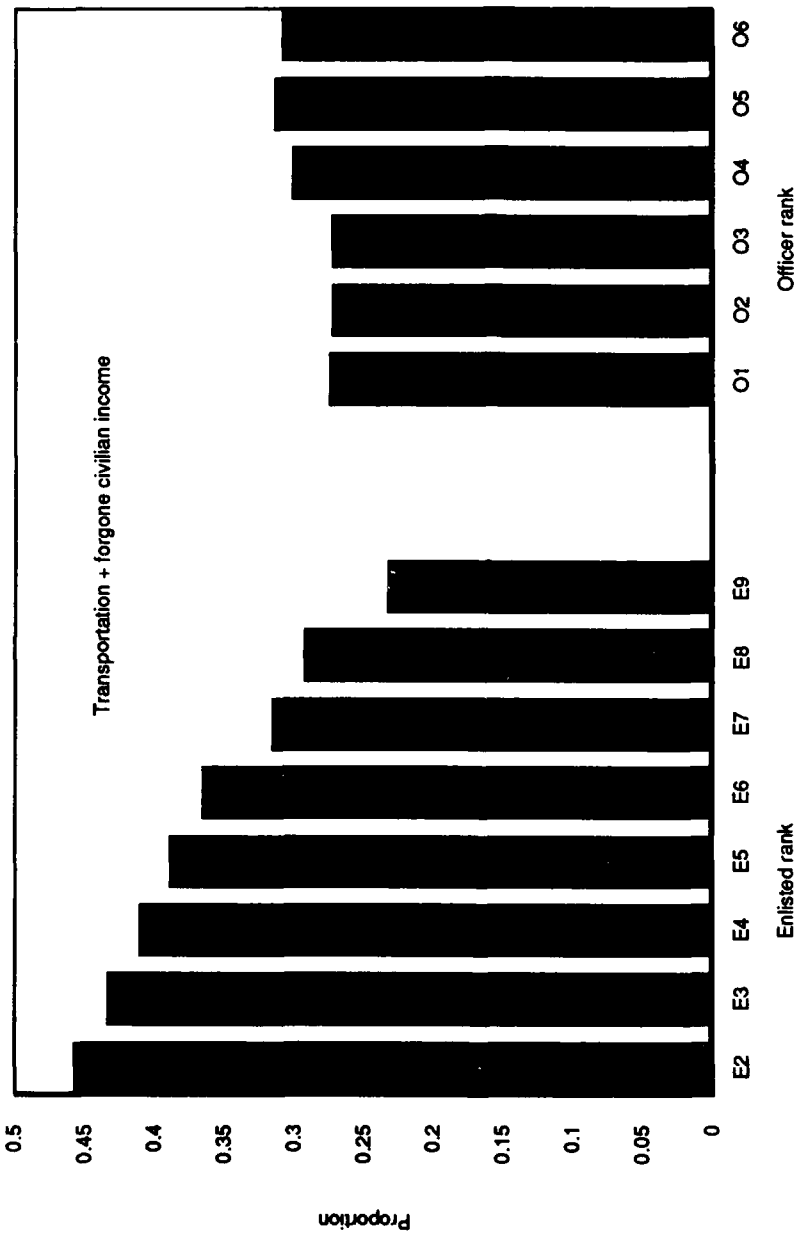


Fig. 3.7—Fixed costs as proportion of after-tax reserve pay

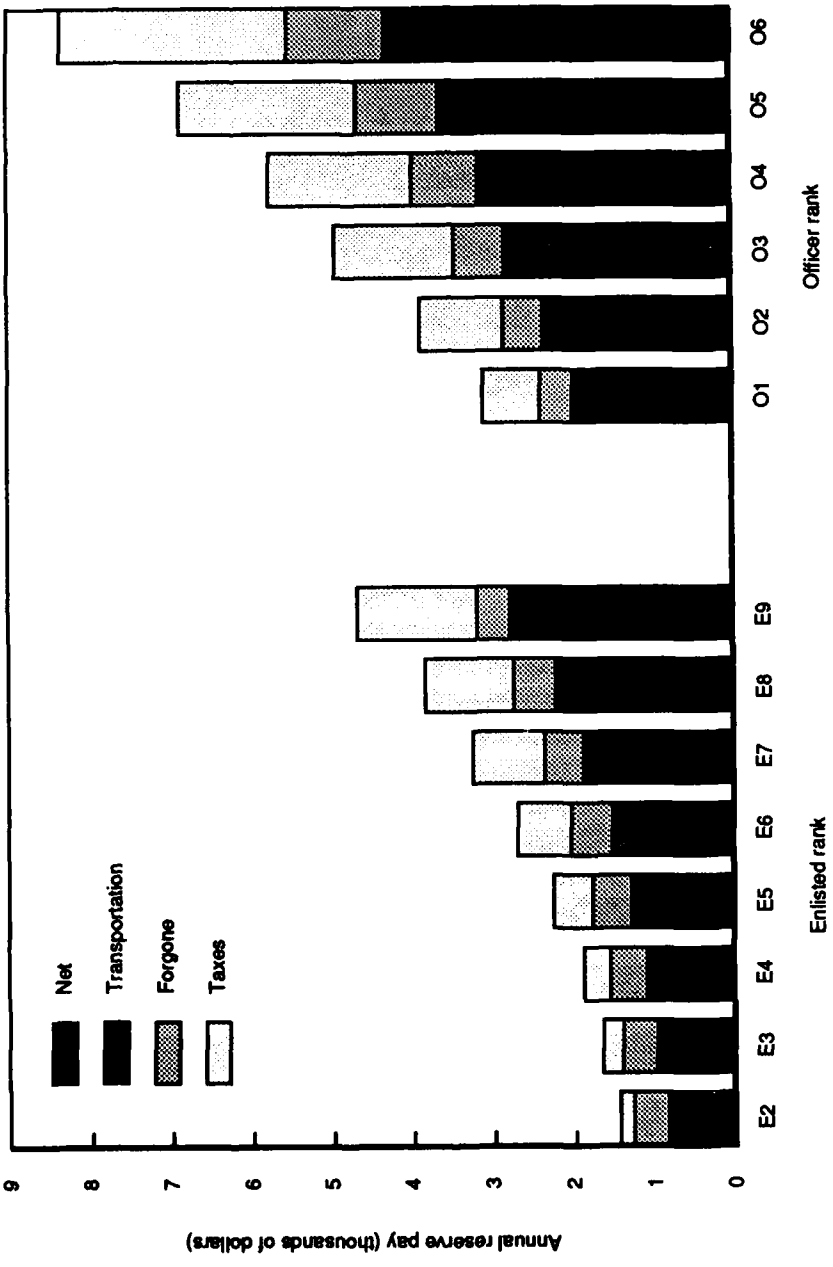


Fig. 3.8—Gross vs. net reserve income

The data show that younger enlisted personnel net less than one-half of their gross reserve income, and most of the loss comes from transportation and forgone income.[12] The data show in addition that senior officers also net less than one-half of gross income, but here the primary reason is taxes. Generally, reservists "take home" between 45 to 60 percent of gross reserve income, with junior enlisted and senior officers taking home a smaller percentage.

It is evident that substantial differences exist between reserve gross and net income, and that these differences vary by officer/enlisted and by different grade levels.

Net Hourly Reserve Wage. The net (net of taxes and fixed costs) hourly reserve income is derived from the data on annual net reserve income and certain assumptions regarding the number of hours worked by typical reservists. This hourly income is estimated by dividing the net annual income increase from reserve participation by the net annual increase in working hours from participation. For full-time workers, the increase in working hours is assumed to be all drill time ($48 \times 4 = 192$ hours) plus four days of annual training (32 hours). The remaining annual training time (ten days) is assumed to substitute for civilian work time. For part-time and unemployed individuals, we assume additional net working hours as the difference between average civilian hours and full-time hours in two weeks.

This net hourly wage captures the monetary incentive from reserve service better than the gross hourly wage, and should serve as a more definitive measure of retention decisions. It is interesting to compare this wage rate with the civilian after-tax wage rate (Fig. 3.9). We would expect that—other things equal—gaps between reserve and civilian wage rates would result in lower retention and less recruiting success. We would expect this to be true if individuals are paid at a premium for overtime work and overtime opportunities are available at this premium wage rate. We computed an overtime wage rate similar to the civilian hourly wage by averaging data available from the survey on both the frequency of overtime and the way such overtime was reimbursed for the different pay grades. These hourly wage rates are shown in Fig. 3.9. The data show that reserve officers earn a higher wage rate on their reserve job than on their civilian job,[13] whereas the

[12]We present evidence later in this section on the frequency of overtime for reservists as well as whether they were paid a premium wage for such overtime work. The data show that junior enlisted are most likely to lose overtime opportunities as well as be paid premium wages for overtime work (Tables 3.12 and 3.13).

[13]While we note this to be the case, we find the difference to be somewhat surprising and can offer little explanation for it although we believe it to be an important contributing factor to the much higher retention of officers discussed later.

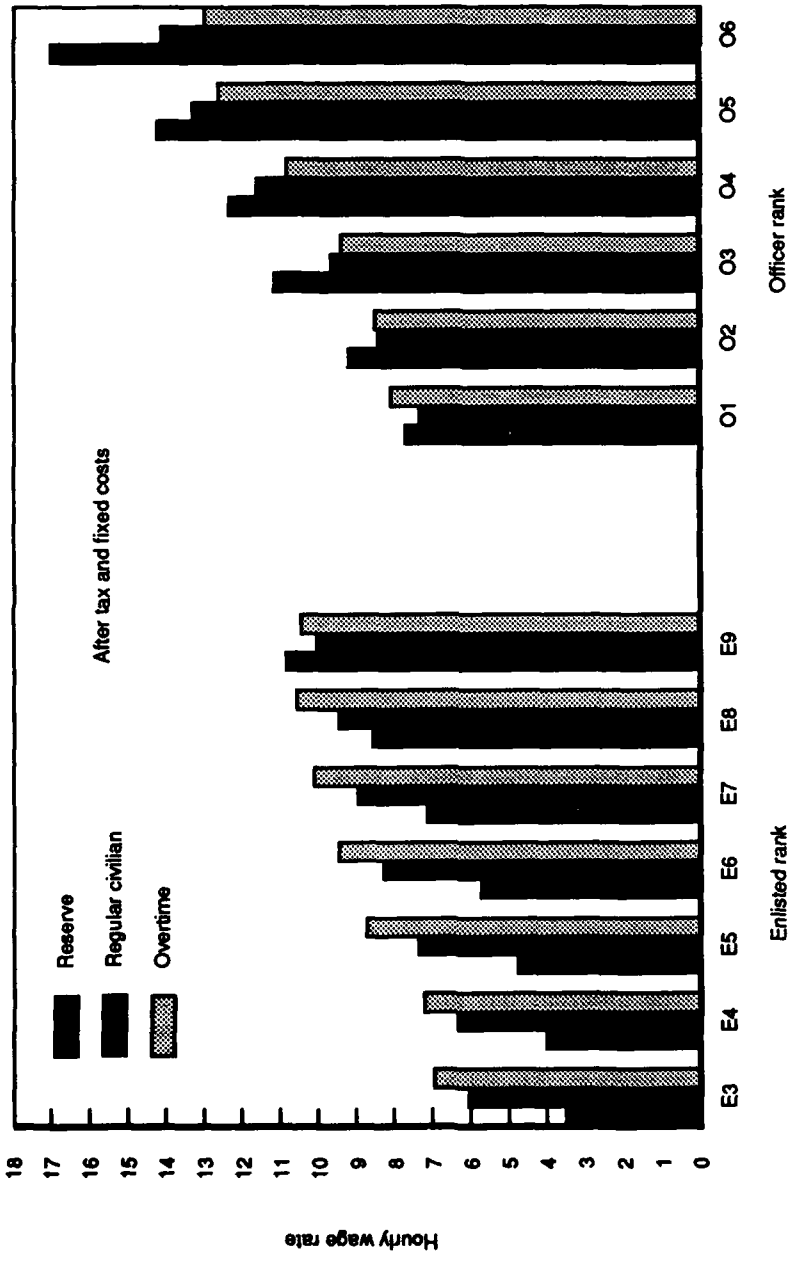


Fig. 3.9—Comparing civilian and reserve hourly wage rates

reverse is true for reserve enlisted personnel, especially junior enlisted. This, of course, holds for comparisons between reserve hourly wage and overtime wage as well. These results may offer a partial explanation for the much higher officer continuation rates discussed in Sec. IV (Fig. 4.1) and the much higher rates of attrition found among junior enlisted personnel, also discussed in Sec. IV.

A Caveat. It is important at this point to place a caveat on the results presented here by pointing out that the computed wage rates do not take into account the present value of retirement benefits. As described earlier, the existence of a retirement system makes the reserve unique as a part-time occupation. The benefits accruing to reservists who become retirement eligible are fairly substantial. Because we do not have data on retirement benefits associated with the civilian job, we have focused our discussion on present income to ensure the validity of the comparisons. However, that retirement benefits play an important part in the decisions of reservists to continue in the reserve is amply demonstrated by the data presented in Sec. IV.

Nonmonetary Aspects of Reserve Service

We interpret nonmonetary benefits of reserve service broadly to include all benefits except current and retirement income. We include education benefits, commissary and exchange privileges, satisfaction of certain leisure needs through social interaction or getting away to a new environment, opportunity to use special equipment, and job satisfaction associated with reserve service. Some indication of the importance of these factors is given in Table 3.11, where individuals rated factors that were important in their decision to stay in the reserve. Several interesting results emerge:

- Three reasons rank far above other reasons for staying and are mentioned by over 50 percent of reservists as major contributors to staying: retirement benefits, pride in accomplishment, and service to country.
  - — Retirement benefits are most often mentioned for both enlisted and officer personnel as a major contributor to staying in the reserve. These results are of course stronger for the more senior enlisted personnel and officers.
  - — Pride in accomplishment and service to the country are mentioned almost as often as retirement benefits as a major contributor, with higher ranking personnel mentioning them more frequently.
- Three reasons are cited over one-third of the time as major

Table 3.11

MOTIVATION FOR RESERVE SERVICE

Question: How much have each of the following contributed to your most recent decision to stay in the Guard/Reserve?

Grade	Needed the Money for Basic Family Expenses		Wanted Extra Money to Use Now		Saving Income for the Future	
	Major Contribution (%)	Moderate Contribution (%)	Major Contribution (%)	Moderate Contribution (%)	Major Contribution (%)	Moderate Contribution (%)
Enlisted						
E-3	36.7	23.9	38.0	28.6	19.8	21.8
E-4	37.9	26.6	38.2	29.4	22.7	24.2
E-5	36.8	26.1	36.8	27.4	21.8	23.9
E-6	31.5	26.2	32.0	29.6	21.4	25.2
E-7	24.7	28.0	29.1	30.3	21.8	26.3
E-8	20.3	31.2	22.9	34.8	21.1	27.1
E-9	18.5	26.6	22.8	24.1	23.4	29.7
Total	34.0	26.5	34.8	29.0	21.9	24.6
Officer						
O-1	25.4	30.6	24.5	34.4	18.9	25.6
O-2	25.5	31.1	29.1	33.4	20.7	29.7
O-3	26.2	27.2	27.6	31.9	21.8	27.4
O-4	22.5	26.6	26.8	32.4	21.7	29.1
O-5	15.3	26.1	20.1	32.9	17.9	32.8
O-6	14.7	17.5	14.8	26.2	12.9	29.5
Total	22.6	27.1	25.5	32.3	20.3	29.0

Table 3.11 (continued)

Grade	Using Education Benefits		Obtain Training in a Skill That Would Help Get Civilian Job		Getting Credit Toward Guard/Reserve Retirement	
	Major Contribution (%)	Moderate Contribution (%)	Major Contribution (%)	Moderate Contribution (%)	Major Contribution (%)	Moderate Contribution (%)
Enlisted						
E-3	24.5	23.6	23.5	19.7	23.4	19.7
E-4	25.3	22.1	23.9	20.8	34.3	25.8
E-5	16.6	20.1	16.9	19.1	59.0	23.2
E-6	9.3	17.9	10.9	15.1	76.1	16.6
E-7	6.9	13.9	8.1	12.3	83.9	12.9
E-8	4.8	12.9	6.5	13.7	86.8	10.5
E-9	1.9	11.8	6.1	13.3	82.8	11.0
Total	16.1	19.4	16.4	17.7	58.5	20.7
Officer						
O-1	28.8	22.0	13.8	22.5	38.4	31.9
O-2	11.2	16.2	12.0	16.1	47.4	28.5
O-3	5.2	10.5	4.9	12.9	61.9	25.5
O-4	2.8	7.4	2.8	8.2	73.7	20.6
O-5	2.7	9.0	3.4	6.7	77.3	17.8
O-6	2.5	9.1	2.2	7.1	67.6	24.3
Total	6.6	10.8	5.4	11.3	64.6	23.6

Table 3.11 (continued)

Grade	Serving the Country		Serving with the People in the Unit		Promotion Opportunities		Opportunity to Use Military Equipment	
	Major Contribution (%)	Moderate Contribution (%)	Major Contribution (%)	Moderate Contribution (%)	Major Contribution (%)	Moderate Contribution (%)	Major Contribution (%)	Moderate Contribution (%)
Enlisted								
E-3	51.2	35.7	29.9	36.1	26.3	31.4	22.9	28.5
E-4	53.7	33.7	31.2	37.5	30.5	32.5	23.3	27.6
E-5	54.4	35.2	36.0	38.0	29.3	35.2	18.2	25.8
E-6	58.1	32.7	41.0	37.9	31.5	35.0	14.1	22.9
E-7	64.0	30.2	42.1	37.7	35.2	37.1	11.8	22.9
E-8	67.2	29.7	45.7	37.4	40.0	38.4	10.5	22.7
E-9	80.2	18.3	48.7	35.5	36.6	19.3	11.8	16.2
Total	56.6	33.4	36.6	37.7	31.0	34.4	17.9	25.3
Officer								
O-1	65.1	28.6	25.6	46.4	33.4	41.0	16.9	26.1
O-2	58.5	33.2	31.2	40.2	35.8	36.9	14.5	20.6
O-3	53.8	34.6	28.5	40.5	29.2	41.5	8.6	16.5
O-4	54.8	33.2	32.1	38.3	33.2	38.2	8.6	15.6
O-5	63.5	29.6	35.8	36.7	43.1	38.5	7.6	15.8
O-6	72.4	22.6	42.3	34.1	33.8	33.6	7.6	11.1
Total	58.1	32.1	31.6	39.3	33.9	39.0	9.8	17.1

Table 3.11 (continued)

Grade	Challenge of Military Training		Travel/"Get Away" Opportunities		Just Enjoy the Guard/Reserve		Pride in My Accomplishments in the Guard/Reserve	
	Major Contribution (%)	Moderate Contribution (%)	Major Contribution (%)	Moderate Contribution (%)	Major Contribution (%)	Moderate Contribution (%)	Major Contribution (%)	Moderate Contribution (%)
Enlisted								
E-3	36.1	31.6	24.9	27.8	23.0	29.7	37.9	32.1
E-4	36.3	33.3	27.3	28.4	28.8	32.2	44.3	32.7
E-5	28.2	34.5	28.7	28.7	35.0	35.8	48.2	33.5
E-6	25.9	33.8	27.5	29.3	40.6	35.2	52.7	32.3
E-7	27.8	35.4	25.6	30.2	47.4	33.5	61.4	27.6
E-8	31.5	36.9	23.5	30.9	53.6	31.0	72.7	22.5
E-9	46.4	32.1	23.6	35.2	68.6	24.9	87.5	10.5
Total	30.4	34.0	27.4	28.9	36.3	33.9	50.2	31.8
Officer								
O-1	39.1	36.8	21.4	30.6	41.7	34.4	54.5	32.8
O-2	34.1	34.5	22.1	31.6	39.7	36.5	55.7	31.1
O-3	21.8	33.3	19.8	30.4	36.1	35.0	44.8	35.4
O-4	17.1	29.9	18.7	31.2	36.2	36.2	45.1	34.3
O-5	21.3	30.7	17.1	35.1	46.1	35.2	58.8	29.2
O-6	25.9	31.5	21.5	30.6	56.7	28.0	67.3	22.3
Total	23.4	32.2	19.5	31.5	39.6	35.2	50.3	32.7

SOURCE: 1986 Reserve Components Survey, Q.26.

contributors by enlisted personnel: serving with people in the unit, "just enjoy the reserve," and current income needs. The first two are mentioned more frequently by more senior people, whereas junior people tend to mention current income.

- Promotion, challenge of military training, and "getting away" were mentioned by between one-fourth to one-third of reservists.
- Approximately one-fifth of enlisted personnel mention educational benefits, training for civilian jobs, and opportunity to use military equipment as major contributors with more frequent mention by junior personnel. All of these are less important to officers.

The motivation for staying in the reserve is neither purely economic or noneconomic. It is clear that reserve service satisfies a variety of current and deferred income needs, patriotic, social, and leisure needs, and growth needs through education and training requirements.

Monetary and Nonmonetary Opportunity Costs of Reserve Service

Moonlighting labor market decisions are complex partly because they often require a commitment of time to work—time that has several other demands on it. These are the opportunity costs of reserve service, and carry both monetary and nonmonetary aspects. For a typical reservist with a family and a full-time job, hours spent on the reserve job mean fewer leisure hours, less time available to spend with the family, on the regular job, another moonlighting job, or in school. This requires a careful balancing of the benefits of a moonlighting job against the value placed on additional time spent in other pursuits.

The *monetary* opportunity costs arise because the reserve job may involve forgoing the opportunity to work overtime hours on the regular civilian job or to work at another moonlighting job. Occasionally, the reservist may be passed over for promotion. The opportunity costs can be quite different for individual reservists. For some, lost income for overtime may predominate, while for others, conflicts with spouse over reserve time may dominate. We estimate below the prevalence of these opportunity costs from the 1986 Survey of Reserve Forces.

Survey data indicate that a significant number of reservists lose overtime opportunity and wages as a result of the reserve job (Table 3.12). These data indicate that 47 percent of enlisted (but only 24 percent of officers) frequently or occasionally lose overtime opportunity/extra pay due to reserve service. Lost overtime is much more

Table 3.12

LOST OVERTIME OPPORTUNITY FOR RESERVISTS

Question: In 1985, did you lose opportunities for overtime/ extra pay because of your Guard/Reserve obligations?

Grade	Yes, Frequently (%)	Yes, Occasionally (%)	No (%)	Total
Enlisted				
E-3	23.4	33.8	42.8	11,660
E-4	16.9	32.6	50.5	98,427
E-5	14.4	33.4	52.2	115,444
E-6	13.9	32.3	53.8	89,209
E-7	12.5	28.9	58.6	39,511
E-8	10.2	26.8	63.0	11,978
E-9	8.8	21.4	69.8	3,434
Total	14.9	32.1	53.0	371,001
Officer				
O-1	11.1	29.4	59.5	4,595
O-2	8.2	27.3	64.5	7,327
O-3	7.9	16.5	75.6	18,366
O-4	6.9	14.0	79.1	20,787
O-5	6.1	10.0	83.9	9,694
C-6	6.9	9.1	84.0	3,796
Total	7.5	16.4	76.1	64,564

SOURCE: 1986 Reserve Components Survey, Q.103.

prevalent among lower ranking enlisted and officers. Less senior personnel are also more likely to be paid wage premiums for overtime (Table 3.13), so income losses from overtime may be a significant factor for younger personnel.

Whether reserve service hinders promotion or advancement in civilian jobs is more difficult to identify. Although survey data indicate that some reservists feel that their participation has hindered advancement, a larger percentage feel reserve service has helped (Table 3.14).[14] Another indicator of possible lost opportunity in civilian jobs is the conflict often felt in working two jobs. Survey questions asked reservists about supervisors' attitudes toward reserve service (Table 3.15). Approximately 15 percent of officers and enlisted personnel have supervisors with somewhat or very unfavorable attitudes. These attitudes could translate into lower promotion opportunity or possibly

[14]These data are from the 1979 Reserve Force Personnel Survey.

even dismissal. However, the data also indicate that over 50 percent of supervisors have a positive attitude toward reserve service, which could result in improved promotion opportunity.

There appears to be little difference in civilian supervisor attitude between junior and senior enlisted personnel, although junior officers encounter more employer problems. One might expect that—other things equal—senior personnel would encounter fewer employer problems due to self-selection. However, an alternative explanation is offered by data in Tables 3.16 and 3.17. More senior reserve personnel have longer working hours on their civilian jobs and more frequently work more than 40 hours per week. Officers also work significantly longer work weeks than enlisted personnel. Thus senior personnel probably encounter more employer problems due to simple working hour conflicts than do junior personnel.

Additional detail on sources of employer conflicts is given in Table 3.18. The data show that weekend drills cause fewer employer conflicts

Table 3.13

OVERTIME PAY RATE FOR RESERVISTS

Question: In 1985, how were you paid when you worked over 40 hours a week?

Grade	Not Paid Extra (%)	Paid at Regular Pay Rate (%)	Paid Time and One-Half (%)	Paid Double (%)	Paid More Than Double (%)	Total
Enlisted						
E-3	17.9	17.2	62.7	1.5	0.7	11,239
E-4	19.4	16.5	61.1	2.5	0.5	95,347
E-5	23.7	12.6	62.0	1.5	0.2	111,999
E-6	31.5	10.2	56.4	1.6	0.3	86,616
E-7	39.0	8.7	51.0	1.3	0.04	38,384
E-8	46.9	9.3	42.6	1.0	0.2	11,686
E-9	58.8	6.6	33.1	1.5	0.0	3,396
Total	27.0	12.6	58.3	1.8	0.3	359,940
Officer						
O-1	45.7	11.2	41.9	0.9	0.3	4,380
O-2	50.1	14.2	24.1	1.2	0.4	7,123
O-3	68.1	13.2	18.0	0.6	0.1	18,001
O-4	77.7	12.2	9.4	0.3	0.4	20,473
O-5	79.9	14.2	5.3	0.2	0.4	9,631
O-6	82.3	16.0	1.7	0.0	0.0	3,728
Total	70.2	13.2	15.8	0.5	0.3	63,337

SOURCE: 1986 Reserve Components Survey, Q.102.

than do absence because of annual training, extra time at reserve work, or time spent at work on reserve matters. Absence due to annual training seems to cause problems more frequently than extra time off or time spent on reserve affairs at work.

The picture that emerges is that senior individuals have more responsibility and time demands both from their civilian and military jobs. Some employer conflicts occur for approximately 15 to 25 percent of reservists at all experience levels, and officers seem to encounter somewhat more problems than enlisted personnel.

Another opportunity cost from reserve service is loss of vacation time. Employers are legally bound to provide military leave for reserve annual training; however, as Table 3.19 shows, not all reservists receive military leave. Approximately 10 percent of officers and enlisted used vacation days to meet reserve obligations. This loss of vacation time may be a source of family conflict over reserve service.

Another element of cost that must be considered is wages that could have been earned from another moonlighting job. An estimate of what reservists forgo in monetary benefits from other moonlighting jobs can be inferred from data on moonlighting. The reserve job offers limited working hours compared to other moonlighting jobs. Reservists

Table 3.14

EFFECTS ON CIVILIAN PROMOTION OF RESERVE SERVICE

Question: Some people feel that participation in the Guard or Reserve helps them get ahead in their civilian job. Others feel that their membership in the Guard or Reserve has hurt their chances for getting ahead in their civilian work. What effect has being a member of the Army National Guard/Army Reserve had on your getting ahead in your current civilian job?

	E-1–E-4	E-5–E-9
Helped me a lot	16.6	13.6
Helped me somewhat	18.7	11.6
Had no effect	51.7	63.6
Hurt my chances somewhat	8.9	8.7
Hurt my chance a lot	4.1	2.6

SOURCE: Tabulations of 1979 Reserve Force Personnel Survey for those working.

Table 3.15

SUPERVISORS' ATTITUDE TOWARD RESERVE SERVICE

Question: What is your immediate (main) civilian supervisor's overall attitude toward your participation in the Guard/Reserve?

Grade	Very/Somewhat Favorable (%)	Neither (%)	Somewhat/Very Unfavorable (%)	Total
Enlisted				
E-3	57.3	26.4	16.3	10,332
E-4	57.8	27.3	14.9	87,446
E-5	57.2	27.3	15.5	104,050
E-6	57.8	27.3	14.9	81,052
E-7	59.1	26.1	14.8	36,207
E-8	62.1	24.1	13.8	10,846
E-9	65.1	20.4	14.5	3,191
Total	57.9	27.0	15.1	334,358
Officer				
O-1	55.0	25.6	19.4	3,864
O-2	57.3	24.0	18.7	6,610
O-3	55.9	28.8	15.3	16,150
O-4	60.3	25.6	14.1	17,412
O-5	58.8	29.8	11.4	7,740
O-6	71.0	18.5	10.5	2,788
Total	58.6	26.6	14.8	54,563

SOURCE: 1986 Reserve Components Survey, Q.94.

typically work 232 additional hours a year,[15] much less than the average of 960 hours a year worked by part-time jobholders,[16] or the median of around 700 hours a year worked by moonlighters on second jobs.[17] Thus, someone who wanted to maximize income by moonlighting or working only part time clearly would be better off with a civilian job, unless significant differences existed between civilian and reserve wages and benefits. Although the typical civilian second job offers the moonlighter the opportunity to earn more money because of increased

[15]The 232 hours involves 16 hours a month in drills—usually on weekends—plus four extra days of work at annual training. Although reservists spend 14 days at annual training, 10 of those days substitute for civilian work and do not constitute additional hours of work.

[16]*Employment and Earnings*, Vol. 26, No. 5, May 1979, Table A-27.

[17]*Multiple Jobholders in May 1978*, U.S. Department of Labor, Bureau of Labor Statistics, Special Labor Force Report 221, Table I. *Monthly Labor Review*, November 1986.

Table 3.16

NORMAL CIVILIAN WEEKLY WORK HOURS FOR RESERVISTS

Question: In 1985, how many hours per week did you usually work at your (main) civilian job?

Grade	25 Hours or or Fewer	26–40 Hours	41–50 Hours	51 or Greater Hours
Enlisted				
E-3	11.4	51.7	23.1	13.8
E-4	9.4	57.9	21.5	11.2
E-5	5.4	59.5	24.2	10.9
E-6	3.0	56.2	28.1	12.7
E-7	1.7	55.0	30.7	12.6
E-8	1.9	47.6	32.9	17.6
E-9	1.7	51.7	35.7	10.9
Total	5.6	57.0	25.5	11.9
Officer				
O-1	14.6	49.1	26.2	10.1
O-2	6.6	44.7	33.5	15.2
O-3	3.9	36.8	39.4	19.9
O-4	2.9	33.5	40.5	23.1
O-5	2.0	31.0	42.2	24.8
O-6	0.9	25.1	41.7	32.3
Total	4.2	35.9	38.7	21.1

SOURCE: 1986 Reserve Components Survey, Q.100.

hours, individual taste, preference for controlled hours, and differences in civilian and reserve monetary and nonmonetary benefits may make the reserve job more attractive.

Family Attitudes

For many reservists, an important component of cost is the decrease in time available to spend with their families or in leisure pursuits. Questions regarding reservists' use of time reveal that reservists feel they spend sufficient time on both civilian jobs and reserve jobs but that time spent on family, leisure, and community activities is insufficient (Table 3.20).

The data show that one-half to three-quarters of reservists feel that insufficient time is spent on family activities and leisure time. These contrast sharply with the less than 10 percent who feel they do not spend enough time on civilian or reserve jobs. About one-quarter of officers mention that too much time is spent on civilian and reserve

Table 3.17

OVERTIME FREQUENCY FOR RESERVISTS

Question: In 1985, how often did you work more than 40 hours per week at your (main) civilian job?

Grade	None (%)	1–4 Weeks (%)	5–9 Weeks (%)	10–14 Weeks (%)	15–19 Weeks (%)	20 or More Weeks (%)	Total
Enlisted							
E-3	19.1	22.3	14.0	10.1	4.6	29.9	11,674
E-4	19.9	24.2	12.8	9.6	5.6	27.9	98,474
E-5	18.6	22.2	12.6	8.8	5.2	32.6	115,554
E-6	16.7	19.5	10.7	9.0	5.6	38.5	87,333
E-7	14.8	19.4	9.6	9.5	4.9	41.8	39,543
E-8	12.1	16.5	10.3	8.3	4.5	48.3	11,960
E-9	11.3	17.6	12.2	7.0	5.4	46.5	3,416
Total	17.8	21.6	11.9	9.1	5.3	34.3	371,281
Officer							
O-1	22.1	20.8	12.6	7.8	7.1	29.6	4,601
O-2	15.4	19.1	8.9	6.9	5.2	44.5	7,355
O-3	11.8	13.6	8.9	6.2	4.4	55.1	18,391
O-4	9.6	13.1	7.6	5.3	4.5	59.9	20,795
O-5	7.2	12.7	6.8	5.3	3.0	65.0	9,707
O-6	11.2	7.2	4.4	4.1	3.0	70.1	3,808
Total	11.5	14.0	8.2	5.9	4.4	56.0	64,657

SOURCE: 1986 Reserve Components Survey, Q.101.

jobs. Officers and senior enlisted personnel appear to be the most dissatisfied with the amount of time spent with family or at leisure. Presumably, this pattern of dissatisfaction is not unique to reserve service. While the inflexible schedule and other demands of reserve service may contribute to these feelings, we believe that the same pattern would be found both among full-time civilians (particularly those moonlighting in other civilian occupations) and those in the active force. Unfortunately, we do not have comparable data with which to test our hypotheses. The point here is not that reserve participation itself *causes* such dissatisfaction with the way in which time is spent but that reservists do feel dissatisfied and such feelings could contribute to resentment or eventual separation.

The conflict between family and reserve time is shown in Table 3.21. The data show that over one-third of officers encounter problems with time for annual training and extra time spent at reserve duty, whereas some one-fourth encounter family problems with weekend drills. Mid-level officers at the O-3 and O-4 grade encounter more problems than

either younger or older officers. This is particularly troublesome because these groups presumably have had a longer period of time to adjust to the demands of reserve participation. Perhaps the presence of younger children is a factor.

For enlisted personnel, about one-fourth encounter family problems with annual training and extra time, whereas only 15 percent encounter problems with drill time. Younger enlisted personnel have more problems with absence for annual training than do older personnel. Table 3.22 makes it clear that while a large proportion of spouses have generally favorable attitudes toward reserve participation, between 10–24 percent of enlisted personnel and 8–15 percent of officer personnel face an unfavorable spouse attitude. Younger officers and enlisted face a higher incidence of unfavorable attitudes. Almost 25 percent of E-3 spouses have unfavorable attitudes.

Table 3.18

EMPLOYER-RELATED PROBLEMS DUE TO RESERVE SERVICE

Question: How much of a problem for your main employer (or for you, if self-employed) is absence for the following? (Percentages are for those reporting a "serious/somewhat of a problem.")

Grade	Weekend Drills	Annual Training	Extra Time Spent at Guard/Reserve	Time Spent at Work on Guard/ Reserve Business
Enlisted				
E-3	19.0	34.6	31.5	23.3
E-4	15.6	31.3	27.2	19.5
E-5	14.0	27.8	28.3	21.0
E-6	12.7	27.6	25.9	21.0
E-7	12.4	27.6	24.3	21.7
E-8	11.9	27.2	22.1	19.9
E-9	10.4	28.0	23.3	20.6
Total	14.0	28.8	26.8	20.7
Officer				
O-1	15.1	35.6	31.8	25.8
O-2	13.1	30.8	33.5	24.5
O-3	14.6	39.5	33.2	26.8
O-4	13.3	37.6	32.1	26.5
O-5	10.1	35.7	27.0	22.4
O-6	12.8	33.2	25.5	22.1
Total	13.3	36.7	31.4	25.3

SOURCE: 1986 Reserve Components Survey, Q. 95A-D.

Satisfaction with Reserve Participation and Future Plans

Decisions to stay in the reserve depend on how individuals weigh the benefits and opportunity costs of participation. A series of questions examined overall satisfaction with reserve pay, benefits, and privileges. Dissatisfaction with military pay and allowances was generally fairly low (Table 3.23). Only 13 percent of enlisted and 6 percent of officers expressed any dissatisfaction with pay and allowances. However, dissatisfaction was higher for enlisted and much higher for junior enlisted personnel. About 20 percent of junior enlisted personnel expressed dissatisfaction.

Table 3.24 indicates overall reenlistment intentions for enlisted only. As expected, intentions to continue in the reserve are highly dependent on pay grade. Junior personnel have the highest probability of leaving the reserve: between a quarter to almost two-fifths of the younger personnel state that they will not reenlist or have a very small possibility

Table 3.19

STATUS OF MILITARY LEAVE FOR ANNUAL RESERVE TRAINING

Question: Which of the following describes how you got time off from your civilian job to meet your Guard/Reserve obligations in 1985?

Grade	Self-Employed (%)	Military Leave/Leave of Absence (%)	Used Vacation Days (%)	Served on Days I Didn't Work (%)	Total
Enlisted					
E-3	7.0	57.6	12.0	23.4	11,474
E-4	6.0	61.6	10.0	22.4	96,817
E-5	5.6	67.2	10.4	16.8	114,152
E-6	6.2	70.7	11.1	12.0	88,882
E-7	6.1	74.2	11.0	8.7	39,501
E-8	7.3	72.6	13.0	7.1	11,976
E-9	6.2	75.9	13.2	4.7	3,404
Total	6.0	67.2	10.7	16.1	367,543
Officer					
O-1	8.6	63.1	7.5	20.8	4,540
O-2	7.4	70.7	6.9	15.0	7,333
O-3	10.2	69.2	11.1	9.5	18,372
O-4	15.0	63.6	10.6	10.8	20,859
O-5	17.9	60.5	13.0	8.6	9,708
O-6	24.4	56.2	12.2	7.2	3,794
Total	13.3	65.1	10.5	11.1	64,606

SOURCE: 1986 Reserve Components Survey, Q.106.

Table 3.20

TIME PREFERENCE FOR MAJOR ACTIVITIES

Question: How do you feel about the amount of time you spend on each activity listed below?

	E-1–E-4	E-5–E-9	O-1–O-3	O-3+
Civilian job				
Spend too much time	14.9	20.1	23.5	28.3
Right amount of time	59.6	68.1	62.5	63.2
Don't spend enough time	9.2	4.5	5.3	6.0
Does not apply	16.4	7.4	8.7	2.5
Total	100.0	100.0	100.0	100.0
Reserve job				
Spend too much time	9.5	10.0	20.5	26.3
Right amount of time	78.5	81.4	69.1	68.6
Don't spend enough time	10.1	7.6	9.6	4.8
Does not apply	1.8	1.0	0.7	0.3
Total	100.0	100.0	100.0	100.0
Family activities				
Spend too much time	1.9	0.6	0.3	0.0
Right amount of time	38.2	31.1	27.4	23.2
Don't spend enough time	53.9	64.1	66.7	73.7
Does not apply	5.9	4.2	5.6	3.0
Total	100.0	100.0	100.0	100.0
Leisure time				
Spend too much time	5.7	1.8	1.3	0.6
Right amount of time	38.9	31.0	28.5	22.8
Don't spend enough time	52.3	65.4	69.5	76.1
Does not apply	3.1	1.8	0.7	0.5
Total	100.0	100.0	100.0	100.0
Community activities				
Spend too much time	2.1	2.8	2.6	4.8
Right amount of time	28.8	30.5	29.7	37.0
Don't spend enough time	45.3	48.6	54.9	51.0
Does not apply	23.8	18.2	12.8	7.2
Total	100.0	100.0	100.0	100.0

SOURCE: 1986 Reserve Components Survey, Q.121.

Table 3.21

FAMILY PROBLEMS DUE TO RESERVE SERVICE

Question: How much of a problem for the family is absence for the following? (Percentages are for those reporting "serious/somewhat of a problem.")

Grade	Weekend Drills	Annual Training	Extra Time Spent at Guard/Reserve
Enlisted			
E-3	18.7	38.3	30.1
E-4	16.3	30.2	22.1
E-5	13.8	24.1	21.1
E-6	14.9	24.0	22.7
E-7	14.5	22.9	22.2
E-8	19.1	24.7	30.6
E-9	20.8	23.2	33.9
Total	15.1	25.2	22.6
Officer			
O-1	13.6	25.0	29.5
O-2	19.6	29.4	36.4
O-3	27.9	37.6	42.9
O-4	30.0	36.6	40.8
O-5	27.2	32.5	34.8
O-6	23.7	26.5	27.9
Total	26.7	34.3	38.5

SOURCE: 1986 Reserve Components Survey, Q.87A-C.

Table 3.22

SPOUSE ATTITUDE TOWARD RESERVE SERVICE

Question: What is your spouse's overall attitude toward your participation in the Guard/Reserve?

Grade	Very/Somewhat Favorable (%)	Neither (%)	Somewhat/Very Unfavorable (%)	Total
Enlisted				
E-3	60.6	15.2	24.2	3,488
E-4	67.8	15.9	16.3	46,113
E-5	75.2	13.9	10.9	82,053
E-6	76.6	12.8	10.6	73,536
E-7	79.2	11.2	9.6	34,440
E-8	79.9	10.7	9.4	10,863
E-9	80.1	7.1	12.8	3,276
Total	74.9	13.3	11.8	253,970
Officer				
O-1	80.5	11.4	8.1	2,706
O-2	75.8	10.0	14.2	4,845
O-3	74.2	11.5	14.3	14,888
O-4	78.7	9.2	12.1	17,657
O-5	83.3	8.6	8.1	8,525
O-6	84.2	7.9	7.9	3,445
Total	78.4	9.8	11.8	52,066

SOURCE: 1986 Reserve Components Survey, Q.88.

Table 3.23

DISSATISFACTION WITH RESERVE PAY AND TRAINING

Question: All things considered, how satisfied are you with the following? (Percentages shown are for those reporting "dissatisfied" or "very dissatisfied.")

Grade	Military Pay and Allowances	Opportunities for Education/ Training
Enlisted		
E-1	29.9	35.6
E-2	21.0	19.6
E-3	20.0	24.7
E-4	16.4	20.9
E-5	13.1	20.3
E-6	11.6	19.5
E-7	9.0	20.1
E-8	8.2	18.0
E-9	6.4	11.1
Total	13.3	20.2
Officer		
O-1	6.5	20.5
O-2	8.1	23.1
O-3	5.9	20.5
O-4	5.0	14.9
O-5	4.6	9.8
O-6	4.0	7.8
Total	5.6	16.7

SOURCE: 1986 Reserve Components Survey, Q.123A-G.

of doing so, given current conditions. Among the senior enlisted personnel, those in pay grades E-5 to E-8—about 13 percent—say they are unlikely or definitely not likely to reenlist. The high rate for the E-9 group is, of course, because several of them are likely to be approaching retirement.

SUMMARY

This section has discussed the benefits and costs of reserve participation. The analysis, particularly of the cost side, highlights the importance of placing the reserve participation decision in the context of the broader labor market. It is not enough to define net reserve income as after-tax income less transportation costs. This fails to

Table 3.24

REENLISTMENT INTENTION OF RESERVISTS

Question: How likely are you to reenlist or extend at the end of your current term of service? (Percentages are for those reporting "no chance" or "slight/very slight" possibility.)

Grade	No Chance	Very Slight/Slight Possibility
E-1	—	—
E-2	21.9	17.9
E-3	19.2	18.0
E-4	10.5	13.7
E-5	5.1	7.9
E-6	5.2	6.6
E-7	7.1	6.7
E-8	8.4	5.0
E-9	20.1	6.3
Total	7.6	9.4

SOURCE: 1986 Reserve Components Survey, Q.18,19,20.

account for some of the other monetary and nonmonetary costs that indeed may prove more important in the long run and surely form part of the calculus underlying the reservist's decision to remain in the reserve.

An enumeration of the costs that must be considered in any computation of the real net return to reserve service is provided in Table 3.25. It is a long and somewhat forbidding list. However, to balance it, there is the evidence that the nonmonetary aspects of reserve service appear to be quite important in the decision to enlist and to continue. Obviously, the one major factor that has been excluded from this analysis and that undoubtedly plays an important role in attracting and retaining reservists is the fairly generous retirement benefit. This makes the reserve occupation unique among other secondary occupations and it certainly adds considerably to the value of reserve service.

Table 3.25

ESTIMATING TOTAL COSTS OF RESERVE PARTICIPATION

Element	Description
Federal, state, and FICA taxes	Reserve pay is taxed at a higher marginal rate because it is generally "over-and-above" civilian pay
Forgone civilian income	From three components: 1. Annual training (AT) attendance. Employer policies may a. pay only the difference between civilian and reserve wages during this time (forgone income = reserve AT pay) b. pay no civilian income (forgone income = civilian income for this period) 2. Lost overtime during AT or drills 3. Alternative moonlight jobs
Transportation costs	From two components: 1. Actual "out-of-pocket" costs 2. Opportunity costs of driving time, equal to the value of the time if spent in an alternative activity
Other costs related to the civilian job, both monetary and nonmonetary	From several interrelated aspects: 1. Loss of or reduced chance of promotion 2. Unfavorable attitudes of supervisors 3. Conflicts with time demands (obtaining leave for AT, drills, extra time spent on reserve work) 4. Increased chance of dismissal
Other nonmonetary costs	From two components: 1. Family conflicts, because of extended time spent at AT, weekend drills, forgone civilian income, forgone vacation time, etc. 2. Decrease in own leisure time

IV. PERSONNEL READINESS ISSUES RELATED TO COMPENSATION

In this and the following section, we examine personnel and training readiness issues identified through previous research, the Reserve Components surveys, and annual budget justification documents. Our aim here is not merely to document the existence of the problems but to provide a comprehensive look at the factors that appear to be related to the problems by summarizing the findings of several analytical studies. Specifically, we examine the following issues:

- Shortages of personnel in units, by skill, grade, function, and location;
- High rates of attrition among enlisted personnel;
- Potential personnel shortages during and after mobilization;
- Problems in training readiness related to MOS qualification of individuals;
- Potential tradeoffs between personnel and training readiness in units undergoing intense training; and
- Problems resulting from limited time for planning for training, actual training, and administrative work.

We discuss personnel shortages in this section, and training readiness issues in Sec. V.

Our maintained hypothesis is that several of the problems are at least partially amenable to solution through changes in the reserve compensation system. We had shown earlier that reservists face monetary and nonmonetary costs that substantially reduce their net return from reserve service. This is particularly true for the more junior pay grades. The conclusions briefly summarize the proposals for redesign of the reserve compensation system that will be discussed at length in a forthcoming report. The rationale for the proposals derives from the evidence presented in Secs. IV and V.

SHORTAGES OF PERSONNEL IN UNITS

In the last ten years Selected Reserve strength levels have grown dramatically (Table 4.1), primarily driven by increasing reliance on reserve forces to undertake wartime missions. For the Army components, this growth alleviated a severe shortage of personnel

experienced after the end of the draft. For the other components, the growth generally added to strength levels at the end of the draft.

The dramatic 36 percent growth in Army Selected Reserve strength from 1976 to 1986 was accompanied by several recruiting and compensation initiatives that helped make the growth possible. These initiatives included implementation of enlistment and reenlistment bonus payments, expanded educational benefits and loan forgiveness programs, sizable real pay increases in 1980 and 1981, and increases in recruiting and advertising budgets. However, part of the increase—particularly for the Air and Naval components—may also be attributed simply to increased demand. Rising requirements allowed the components to take in additional people who were willing to enter at prevailing wage rates without additional compensation or benefit initiatives.

The sizable growth in overall strength over the last ten years is an argument for the adequacy of the current level and structure of reserve compensation. It indicates that accession and retention levels have been sufficient not only to maintain constant force size, but also to allow growth in force size. If the size of the reserve force were to remain at constant levels in the next five years, current accession and retention levels and compensation levels would probably be more than sufficient to maintain force strength.

Table 4.1

SELECTED RESERVE END STRENGTH BY COMPONENT

FY End Strength	1976	1978	1980	1982	1984	1986
ARNG	362,330	340,996	366,585	407,601	434,259	446,194
USAR	194,611	185,753	205,650	256,659	275,062	309,709
USNR	97,051	82,765	86,751	93,719	120,558	141,504
USMCR	29,638	32,695	35,382	40,005	40,619	41,582
ANG	90,992	91,674	96,260	100,657	105,012	112,592
USAFR	48,370	53,884	58,921	64,443	70,318	78,519
DoD Total	822,992	787,767	849,549	963,084	1,045,828	1,130,100

SOURCE: *Official Guard and Reserve Manpower Strength and Statistics—FY 1986 Summary*, RCS:DD-RA(M) 1147/1148, Assistant Secretary of Defense (Reserve Affairs).

NOTE: ARNG = Army National Guard, USAR = U.S. Army Reserve, USNR = U.S. Naval Reserve, USMCR = U.S. Marine Corps Reserve, ANG = Air National Guard, USAFR = U.S. Air Force Reserve.

The policy recently adopted by the Department of Defense is to maintain as small an active peacetime force as is consistent with overall defense strategies. This has required increased reliance on reserve component units for more and more complex missions, greater emphasis on a "Total Force" approach, and a recognition that all units in the force structure contribute to success in wartime. The DoD manpower requests for FY88, FY89, and FY90 mirror the new policy by holding active component personnel to their current—except for the Navy—levels while asking for increases in Selected Reserve strength (Table 4.2).

However, the DoD report, in its analysis of military manpower supply, highlights the fact that a critical shortfall could occur between M+60 and M+120: "after the available pretrained individual reserves and retirees have been mobilized; when no significant training output has occurred; and, while casualty replacement requirements are increas-

Table 4.2

DEPARTMENT OF DEFENSE MANPOWER REQUESTS, FY88

	I. Active Component Personnel (End strength in thousands)		
	FY88	FY89	FY90
Army	780.9	780.9	780.9
Navy	593.2	602.8	610.4
Marine Corps	199.6	200.1	200.6
Air Force	598.7	600.6	599.7
Total	2,172.4	2,184.4	2,191.6
	II. Selected Reserve Manpower (End strength in thousands)		
	FY88	FY89	FY90
Army National Guard	425.7	458.8	464.9
Army Reserve	319.4	330.4	339.0
Naval Reserve	149.5	157.4	161.7
Marine Corps Reserve	42.8	43.7	44.5
Air National Guard	113.4	116.7	117.7
Air Force Reserve	79.6	83.3	85.5
Total	1,157.3	1,190.3	1,213.4

SOURCE: *DoD Manpower Requirements Report FY1988*, February 1987, p. II-4.

ing."[1] Increasing the size of the Selected Reserve is seen as the primary tool for overcoming this shortfall. Thus, reserve compensation levels will need to be sufficient to maintain peacetime force growth and retain the larger force size which growth will bring.

Besides maintaining overall force size at the aggregate numerical level, reserve compensation must be structured to meet authorizations by skill in each unit. Reserve unit readiness to a great degree depends not only on overall strength levels, but on the distribution of strength by skill and unit. Maximum personnel readiness is achieved when *each* unit achieves its authorized strength with individuals who are proficient in the authorized skills. Unlike the active force, individuals cannot be nationally recruited, trained, and assigned to local units. Each reserve unit needs to meet its particular supply and skill mix from its local (usually within 100 miles) labor market. Conditions in local labor markets and reserve demand by skill vary markedly from city to city; the fact that the compensation system does not allow for adjustments to local conditions reveals itself in supply shortages for certain types of personnel or in certain units. Personnel supply shortages revealed over the last several years for reserve components include the following groups:

- Persistent general shortages of junior enlisted personnel;
- Isolated geographical or skill shortages of senior enlisted personnel;
- Shortages of medical personnel at the officer and enlisted level;[2]
- Persistent enlisted supply shortages for larger units in the Army Reserve and National Guard; and
- Emerging shortages in units where training is intense or extended training time is demanded.[3]

Skill and Grade Imbalances

Published data of the reserve skill and grade structure shows that significant imbalances exist between programmed manning and the actual manning of many specialties. Table 4.3 shows the criteria used by the reserve components in determining whether skills are overmanned, balanced, or short with respect to the programmed requirements. Table 4.4 shows the imbalances in skill and grade existing in FY86.

---

[1]Department of Defense, *Manpower Requirements Report FY1988*, February 1987, pp. II-15.

[2]The QRMC is sponsoring a separate study of medical personnel by the Logistics Management Institute; this issue is not discussed here.

[3]These units tend to be roundout units, mostly mechanized infantry and armor units.

Table 4.3

CRITERIA FOR DETERMINING BALANCE FOR PROGRAMMED MANNING AND INDIVIDUAL (PMI) ACCOUNTS

	% of PMI filled		
Skills with PMI of	Over	Balanced	Short
500 or more people	>105	≥95–105	<95
100–499 people	>110	90–110	<90
Less than 100 people	>115	85–115	<85

The data in the table support two tentative conclusions. First, shortages of junior enlisted personnel constitute the primary numerical shortage in reserve manpower, and severe distributional skill shortages exist across both officer and enlisted authorizations. These patterns characterize each service's shortage, although the magnitude of shortage differs by service. In general, the Air Guard and the Air Reserve appear to have the fewest manning problems, and the Army Reserve (both Guard and Reserve) the most severe problems.

It appears that the growth in size of the reserve components over the last several years has not been evenly distributed. It has overmanned certain skills and created distributional skill imbalances. These conditions are exacerbated because of the recent transfers of entire units out of the active force into the reserve. However, such patterns are consistent with our hypothesis that compensation may be adequate at the aggregate level, but that the lack of flexibility at the local level leads to imbalances in units both geographically and by specialty.

Shortages of Personnel in Units: Analytical Findings

The pattern of personnel shortages across Army Reserve and Army National Guard units has been explored to determine the extent to which unit characteristics or local labor market characteristics are predominant in explaining shortages. The evidence on unit shortages comes from a study that examined the fill-rate (or percent fill) of a unit as a function of unit-specific characteristics (unit size or authorized strength, unit mission, competition among units) and local-specific characteristics (size and nature of the recruiting pool, economic and demographic characteristics, region/state, etc.).

Table 4.4

RESERVE COMPONENTS SKILL AND GRADE INVENTORY VERSUS PROGRAMMED MANNING AND INDIVIDUALS, FY86

	Army Reserve		Army National Guard		Naval Reserve		Marine Corps Reserve		Air Force Reserve		Air National Guard	
Skill and Grade	Over[a]	Short[a]	Over	Short	Over	Short	Over	Short	Over	Short	Over	Short
E-1–E-4												
Number of skills	184	105	17	29	20	38	44	183	22	18	46	32
Over/short (in 000s)	24.5	–5.9	7.1	–30.7	3.2	–11.2	1.0	–6.0	1.4	–7.4	4.8	–7.4
E-5–E-9												
Number of skills	104	176	27	21	–40	28	117	63	19	12	NA	NA
Over/short (in 000s)	7.1	–15.0	21.1	–6.5	3.5	–1.2	4.6	–0.9	7.9	–1.7	NA	NA
Warrant Officer												
Number of skills	29	45	1	12	–7	17	33	22	(b)	(b)	5	0
Over/short (in 000s)	1.2	–2.1	.01	–.2	0.4	–0.2	.2	(b)	(b)	(b)	0	0
Officers O-1–O-6												
Number of skills	53	56	6	6	16	32	47	91	27	35	22	25
Over/short (in 000s)	6.8	–9.9	0.8	–2.2	2.9	–3.3	1.2	–1.1	1.3	–2.1	1.7	–2.2

SOURCE: *1986 DOD Manpower Requirements Report.*

[a] See table 4.3 for definitions of these categories.

[b] Less than 50.

There are over 6,000 Army National Guard and Army Reserve units (at the company level or separately organized detachments) located throughout the United States, although many are grouped into larger units such as battalions or brigades. Each unit has a particular function (such as infantry, combat support, administrative, etc.) and a particular mobilization mission. Each unit is assigned an authorized manpower strength that is its peacetime manning goal; the ability to attain and maintain this strength level forms part of its readiness evaluation. Reserve units have been differentially successful in meeting these manning goals. The manning rates vary widely: from undermanning by more than 50 percent to overmanning by more than 25 percent.

Undermanning of units clearly represents a degradation of personnel readiness, although the precise relationship between readiness and undermanning is hard to decipher.[4] It is entirely possible that equal decrements in manning do not translate into equal decrements in readiness. For example, a unit whose manning rate declines from 1.0 to 0.95 may suffer less of a decline in readiness than a unit whose manning rate declines from 0.80 to 0.75. It may also be the case that undermanning of certain types of units (say, for example, the early deploying ones) have considerably more serious implications for overall force readiness than equivalent undermanning in others.

It is obvious that the highest level of peacetime personnel readiness will be achieved if all units meet their strength objective. As such, understanding the reasons for the *differential success in manning* becomes important for several reasons: to help achieve this goal through the proper use of recruiting resources (broadly defined to include recruiters, enlistment, and reenlistment bonuses) and in deciding locations for new units. Current plans call for significant expansion of the Army Selected Reserve components; to ensure manning success, the location decision must take into account the factors determining such success.

An earlier study used data on units' operating and authorized strengths and functions from 1980 (FORSCOM 1R tape), and county-level Census data from the 1980 Census matched by the county location of the units, to analyze the determinants of unit manning among approximately 2,400 Army National Guard and 2,200 Army Reserve units. Table 4.5 shows clearly that (a) the Guard, regardless of unit size, appears to be more successful in meeting strength requirements, and (b) larger units appear to have a significantly harder time in achieving strength levels.

[4]There are regulations that use data on the extent of undermanning both in terms of personnel and equipment to rate the readiness of units to fulfill their wartime mission. These "condition ratings" are discussed later in the section.

Table 4.5

DISTRIBUTION OF UNITS BY PERCENT FILL, UNIT SIZE, AND COMPONENT, 1980

	Percent Fill (Operating strength/ authorized strength)	
Authorized Strength	Army National Guard	Army Reserve
11–40 members	1.11	0.97
41–80 members	0.96	0.93
81–120 members	0.89	0.83
121–160 members	0.81	0.76
>160 members	0.81	0.74

The empirical model was estimated using percent fill in 1980 as the dependent variable for the Army National Guard and Army Reserve separately. Both unit size and unit mission emerge as important determinants of fill rates. Larger units may face diseconomies of scale in both recruiting and management; they may also be characterized by less cohesion, less camaraderie, or some inherent disadvantage not captured by other variables. Differences by unit mission are particularly significant among Guard units. Combat and combat-support units have considerably more trouble than, say, combat service support units achieving strength levels. Several locational characteristics also appear to have significant effects on unit manning levels. For example, the size of the recruiting pool (proportion of population 16 to 34 years) and the proportion of veterans in this pool (the latter accounting for a possible higher taste for the military) are both positively related to unit manning levels. Counties with faster growth rate tend to favor higher manning; for the Army Reserve, so do larger counties.

The effects of economic characteristics of the county (measured by unemployment rate, average household income, and percent of labor force with a high school education) were all in the expected direction and strongly significant for the Guard. Higher unemployment, as expected, leads to higher manning levels and the effects are significant for both components. Higher unemployment would tend to increase both enlistments (as other job opportunities became curtailed) as well as retention. Higher income counties tended to have lower manning levels, as did counties with higher average levels of education.

There appear to be strong regional effects: the South tends to have relatively higher overall manning although the effects for the other regions are not consistent across components. State dummies were included to allow for the effect of unmeasured characteristics or state policies and management, including incentives; these effects varied widely across states and most were highly significant, although small sample sizes make the results somewhat suspect.

There are several caveats that must be mentioned regarding these results. This analysis is based on cross-section data for a single year, 1980. Changes in reserve policies have been implemented since then, and average unit manning levels have risen considerably. However, significant variation still exists in unit manning levels, and we believe the underlying structural reasons for these variations are probably best captured with 1980 Census data and in poorer recruiting times. A policy implication deriving from this analysis is that significant resources may be needed to offset the inherent differences in manning, and that careful assessments of location decisions are needed to ensure success in manning.

A study by the Congressional Budget Office[5] examined unit readiness among Army Reserve and Army National Guard units, by looking at condition ratings presented in the UNITREP (Unit Status and Identification Report). These ratings basically compare wartime requirements for personnel and equipment with on-hand numbers. There are four categories of condition ratings (usually referred to as C-ratings). They range from C-1, for units that meet at least 90 percent of their wartime requirements with at least 90 percent of personnel trained in the jobs to which they are assigned, to C-4 for those falling below 70 percent of their personnel requirements, or 60 percent for equipment.[6]

Although these C-ratings are subject to a number of limitations in their ability to capture unit readiness fully, nonetheless they still are the best available indicator of the ability of units to carry out their missions. The data were available for a two year period: 1982–1984. The ratings indicated that, on average, reserve units are much less ready than those in the active force. For example, in the Army Reserve, personnel readiness remains much below that of the active

[5]Congressional Budget Office, *Improving the Army Reserves*, the Congress of the United States, Washington D.C., November 1985.

[6]In August 1986, the Joint Chiefs of Staff changed the meaning of these so-called condition ratings to "category level." The five C-levels reflect the status of the unit's resources and training measured against the resources and training to undertake its wartime mission. A C-4 rating now means that the unit requires additional resources and/or training but that it may be directed to undertake portions of its wartime mission, if the situation so dictates.

units with over half of the units being rated C-4 or "not ready." The picture for the Army Guard is considerably better in terms of personnel readiness. However, in terms of "equipment-on-hand" ratings, almost half of units in both the Army Reserve and the Guard had a C-4 rating.

An especially critical area is the readiness of early deploying units. The study examined the readiness of "roundout" units (units that fill out active divisions early in the war) as well as, in a more general way, early deploying units. The major finding was that the Army "has not raised the peacetime readiness of the early-deploying units significantly above that of the late-deploying units—especially in the USAR. Even the roundout units are modestly less ready than the actives."[7] This raises serious concerns regarding our ability to deploy reserve units in time.

The problems outlined here arise at least partly from the fact that the reserve operates in local labor markets: lacking flexibility to offer bonuses or higher pay, early deploying units must compete on an identical basis with other units and other employers of part-time labor for personnel. The findings here argue strongly for flexibility in reserve pay to compensate for differences in size, geographical location, function, and deployment status of units.

HIGH RATES OF ATTRITION

Shortages of junior enlisted personnel in the reserve force have been extremely persistent over time. Evidence for these shortages comes from both the annual manpower requirements reports of the services as well as from survey data collected in both 1979 and 1986 from reservists themselves. The two Army components are most affected by these shortages since they account for over 75 percent of the demand for junior personnel.

Junior personnel requirements are filled mainly by recruiting and retaining nonprior service personnel, although some E-4 requirements are also filled by new prior service personnel. Shortages can result from both low retention rates early in a career as well as inability to recruit the required number and quality of personnel. We discuss below analytical findings on attrition of both prior and nonprior service personnel.

---

[7]Congressional Budget Office, p. 21.

Early Attrition of Reservists

One measure of the stability of various groups of reservists is the expected attrition probability for a three-year period. Figure 4.1 shows the probability of officer and enlisted reservists at each year of service leaving the reserve within the next three years.[8] The data show that junior enlisted personnel have significantly higher three-year attrition rates than either junior or senior officers or senior enlisted personnel. If we assume that a reservist is fully trained after two years, the data show that only about four in ten enlisted personnel will remain for an additional three years. This declines to about three in ten for personnel with four to six years of experience.

Junior reserve officers show significantly lower three-year turnover rates and corresponding greater retention of experience in junior authorizations. Here, the turnover rate for three years is only four in ten individuals. Turnover rates for more senior officer and enlisted

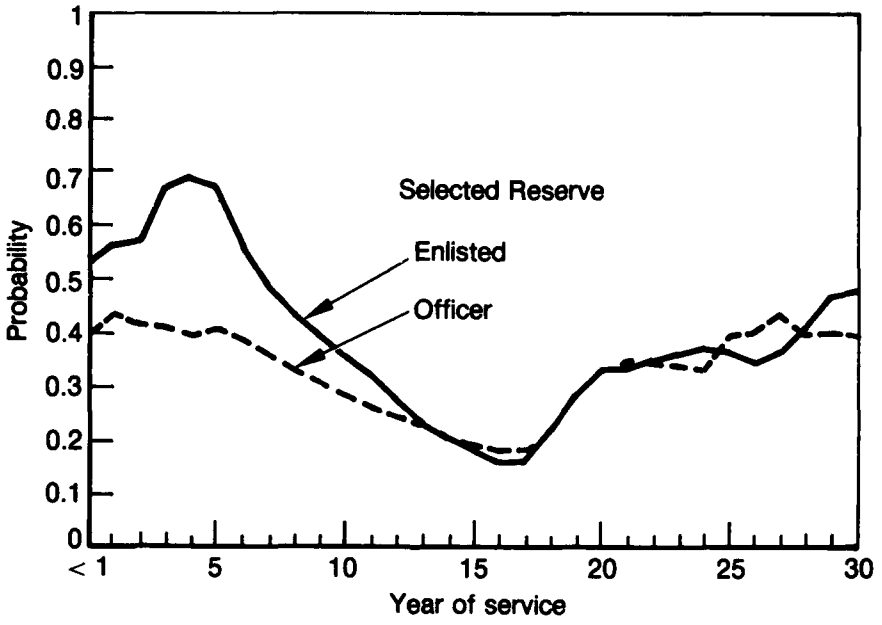


Fig. 4.1—Three-year attrition probability

[8]Continuation rates for 1985–1986 were used at each year of service to calculate the expected survival rate.

personnel are significantly lower—declining to under two in ten for personnel close to retirement eligibility.

These findings can be at least partially explained by the data we presented earlier on the real net return to reservists from reserve participation. Junior enlisted personnel, for example, net less than one-half of their gross reserve income and most of the loss comes from transportation costs and forgone income because of lost civilian pay during annual training. In addition, they tend to face, more frequently, the loss of overtime opportunities because of reserve obligations. Officers, on the other hand, earn a similar or a higher wage rate on their reserve job compared with their civilian job. For reservists with more experience, both officers and enlisted, the retirement system acts as a powerful incentive to stay in the reserve.

Attrition, particularly early attrition prior to the end of the enlisted term of service (sometimes referred to as non-ETS attrition), is generally regarded as the single most important issue facing the Selected Reserve today. Most systematic research on attrition has focused on the Army Reserve and the Army National Guard, partly because these two components are by far the largest and partly because the problem appears to be the most severe for these two components, and drives their accession requirements. Indeed, in FY86, non-ETS losses were 30.0 percent of average enlisted strength for the Army Reserve and are not projected to fall below 25 percent in the next two years. To shed some light on the timing and type of losses, we next present evidence on nonprior and prior service attrition, based on analyses of the FY80–FY82 Army Reserve and Army National Guard accession cohorts.

Nonprior Service Attrition

Individuals who enter the reserve without prior military service require a substantial training investment in order to learn basic military skills and military occupations. This investment occurs during eight weeks of basic military training, an Advanced Individual Training (AIT) course which takes from one month to over a year, and the resources at the unit level required to perform on-the-job training (OJT). The return from this investment occurs as the individual serves the normal six-year term of reserve service.

The longer the individual stays—provided performance is satisfactory—the better the return on the training investment. Attrition of these individuals to civilian life before completion of the term can substantially reduce the return to the training investment. An earlier study which analyzed the FY80 entrance cohort showed separation rates during the first two years of 30.6 percent for the Army National

Guard and 39.5 percent for the Army Reserve, respectively.[9] This study also showed women had significantly higher attrition risks than similar men, and that for both men and women, less education and lower aptitude scores led to much higher attrition risk.

Attrition patterns such as these convinced the services to shift their recruiting emphasis to more highly educated recruits with higher aptitude scores. Enlisted bonus payments and educational benefits were offered to "high-quality" recruits,[10] the number of recruiters was increased, and recruiting incentives were shifted toward higher quality recruits. These policies, along with higher civilian unemployment rates, were successful in increasing the number of higher quality recruits in FY81 and FY82. For example, the percentage of enlistees with high school diplomas increased from 53.3 percent to 71.6 percent in the Army Reserve, and from 68.2 percent to 71.2 percent in the Army National Guard.

A current study extends the earlier attrition study by analyzing attrition for three cohorts: FY80, FY81, and FY82.[11] It analyzes the consistency of attrition behavior and policies over time. The study identifies three types of attrition from the Selected Reserve components which must be treated separately if one is concerned about the return on training investment. Some reservists leave to enter the active force, some leave only to return to the Selected Reserve at a later time, and others remain in civilian life. We receive a greater return on training investment if individuals enter the active service, and some recoupment will occur if an individual subsequently returns to the reserve. These two categories of reserve attrition accounted for 20 to 30 percent of two-year attrition for the Army Reserve and 10 to 15 percent of attrition in the Guard (Table 4.6). Failure to distinguish among these types of attrition will overstate the magnitude of the reserve attrition problems. The study, therefore, examines attrition to civilian life.

The results show that higher enlistment quality (particularly in the Army Reserve) not only did not reduce civilian attrition, but attrition actually increased significantly in the higher quality cohorts. This effect occurred for both the Army National Guard and the Army

[9]David W. Grissmer and Sheila Nataraj Kirby, *Attrition of Nonprior Service Reservists in the Army National Guard and Army Reserve*, The RAND Corporation, R-3267-RA, April 1985.

[10]High-quality recruits are those achieving a Category II score on the AFQT and holding a high school diploma.

[11]David W. Grissmer and Sheila Nataraj Kirby, *Changing Patterns of Nonprior Service Attrition in the Army National Guard and Army Reserve*, The RAND Corporation, R-3626-RA, July 1988.

Table 4.6

TWO-YEAR ATTRITION RATES OF ARMY NATIONAL GUARD AND ARMY RESERVE, FY80–82, NONPRIOR-SERVICE COHORTS, BY TIMING AND DESTINATION OF LOSS
(In percentages)

Destination of Loss	Timing of Loss								
	FY80			FY81			FY82		
	Pretraining, Training	Post-training	Total	Pretraining, Training	Post-training	Total	Pretraining, Training	Post-training	Total
Army National Guard									
Civilian life/IRR	17.8	7.8	25.4	22.9	8.2	31.1	24.1	7.5	31.6
Selected reserves	0.3	0.8	1.1	0.3	0.7	1.0	0.4	0.6	1.0
Active force	0.7	3.4	4.1	0.6	2.4	3.0	0.6	1.9	2.5
Total	18.8	11.8	30.6	23.8	11.3	35.1	25.1	10.0	35.1
Army Reserve									
Civilian life/IRR	7.4	20.9	28.3	11.1	22.1	33.2	11.4	26.3	37.7
Selected reserves	0.7	2.9	3.6	1.1	2.5	3.6	0.7	2.6	3.3
Active force	0.8	6.8	7.6	1.7	5.3	7.0	0.8	4.9	5.7
Total	8.9	30.6	39.5	13.9	29.9	43.8	12.9	33.8	46.7

Reserve. Civilian attrition rates during the first two years of service increased from 25.4 to 31.6 percent for the Army National Guard and from 28.3 to 37.7 for the Army Reserve. The rising level of attrition was mainly accounted for by higher levels of attrition during training for the Guard, but increases in both training and posttraining attrition for the Army Reserve also occurred.

We can advance three possible explanations for this finding. First, attrition discharge policies and training and performance standards may change from one year to the next, shifting the overall level of attrition. For instance, our results show quite different attrition probabilities for similar individuals entering in different cohorts. A high-quality male enlistee entering the Army Reserve who is white, single, and 18–20 years of age had a two-year civilian attrition probability of 0.16, 0.22, and 0.25 in FY80, FY81, and FY82, respectively. These differences may be partially explained by more stringent training standards or easier discharge standards.

If training standards did change from FY80 to FY82, they may have resulted from the services' response to easier recruiting environments—taking the best from any cohort regardless of cohort quality. This "creaming of cohorts" may be a conscious, opportunistic policy that allows the Army to obtain the best of the cohorts entering the trained force. Such a policy would mean that training and performance standards vary from one year to the next depending on accession quality.

On the other hand, unintentional tightening of training standards would occur if the performance of recruits in training were simply "graded on the curve" so that a relatively fixed proportion of recruits are discharged regardless of quality. Higher quality cohorts would then lose the same proportion of accessions as lower quality recruits. If this occurs, a closer coordination of recruiting and training policy is required to take advantage of higher quality cohorts.

Changes in discharge standards at the unit also appeared to have affected post-training attrition for the Army reserve. There is evidence that a policy shift to a more lenient discharge policy for unit commanders in the Army reserve—so called "wrench up"—accounts for the sizable increase in attrition in the FY82 cohort.

Another hypothesis consistent with the results is that rising unemployment and increased recruiter resources bring enlistment cohorts with *unmeasured* characteristics that increase attrition risk. The marginal recruit who joins because of enlistment bonus payments, more intense recruiting, or poorer civilian job prospects may have markedly different attrition propensities than an otherwise similar enlistee. The marginal enlistee within any quality category could have less taste for

the military, have more potential conflicts with employer or families, or be riskier in terms of psychological or social profile.

A third hypothesis is that falling unemployment may bring more job changes and migration and may cause higher attrition for enlistees in the post-training period. Unemployment fell in 1983 and 1984—a period when the FY82 entrance cohort was making post-training decisions. This hypothesis would fit the Army Reserve attrition pattern. However, Guard post-training attrition did not rise during the period, which makes the hypothesis less tenable.

The results from the FY81 and FY82 cohorts with respect to attrition risks of different quality groups tend to support the FY80 results. Although the absolute magnitudes of attrition risk increase over time for the three cohorts studied, the characteristics that are strongly and consistently related to attrition do not change relative to each other. Recruiting and training policies can thus be developed with respect to the characteristics with a fair degree of confidence that the results will hold over time. The relative differences can generally be accurately predicted on the basis of gender, educational achievement, aptitude scores, race, and age.

The characteristic that makes the largest consistent difference in attrition risk is gender. Women are at much higher risk of attrition than similar males.[12] However, the gap between male and female attrition narrows somewhat between FY80 and FY82 for both the Guard and Reserve.

The characteristics that account for the next largest consistent differences in attrition are education and aptitude category. The direction of these effects is similar for men and women—more education and higher aptitude are associated with lower attrition.

Prior Service Attrition. A companion analysis[13] examines the attrition behavior of prior service reservists entering the two Army

[12]There are several explanations for higher attrition risks for women. Women may break reserve commitments more often because they move more often, and change jobs and marital status more frequently than men of similar age. Moreover, both marriage and jobs for women may more frequently lead to conflicts with the reserve commitment. Marriage will more often conflict with reserve service because of pregnancy and greater responsibility for home and children. Women may also encounter more job conflicts with the reserve commitment because of more frequent weekend work, and less control over work schedules and hours. Moreover, women may be less prepared by previous experience than men for meeting training standards in basic training, and may also be less prepared for skill training if nontraditional skills are chosen by women. In terms of our theory, women will encounter more "experience" characteristics on the reserve job than men. Thus, the decision to join the reserve is less grounded on known experience and poses more uncertainty, and will be more easily reversed.

[13]M. Susan Marquis and Sheila Nataraj Kirby, *Economic Factors in Attrition: Prior Service Individuals in the Army National Guard and Army Reserve*, The RAND Corporation, R-3686-RA (forthcoming).

reserve components during FY80–FY82. Prior service personnel account for 56 percent of total accessions in the Army Reserve and about 45 percent in the Army National Guard; these proportions have remained relatively stable over the period FY80 to FY86. The Army Reserve and Army National Guard enlist approximately 80,000 prior service individuals annually. Little is known, however, about how long such reservists stay once they enlist or the factors influencing the separation decision. The importance of understanding the attrition behavior of prior service individuals is emphasized by plans to place increased reliance on reserve units for more and more complex missions.

RAND R-3686-RA analyzes attrition of three fiscal year cohorts enlisting in the Army National Guard and Army Reserve during FY80–FY82. Prior service individuals are followed through the end of FY85. A primary objective of the research is to measure the effect of reserve compensation and other economic factors on attrition, and to identify high-risk individuals.

The conceptual framework, borrowed from earlier work at RAND,[14] focuses on the changes that might occur during the enlistment term to cause a decision to separate. These changes might involve changes in the relative net rewards from military and civilian life, changes in external circumstances and/or changes in information regarding the attributes of the reserve job.

Two survival analysis techniques are used to study when attrition occurs. The first is a descriptive technique that allows us to look at the distribution of attrition times and how variations in a given characteristic affect the timing of separation. The technique reveals the gross effect of that characteristic and everything else that varies with it. A multivariate model was used to estimate the net effect of a characteristic while controlling for other characteristics.

Defining attrition requires first a definition of a policy perspective. From the point of view of the total force, attrition to civilian life is the central problem; transfers to other components of the military are not losses in this context because they remain productive and contributing members of the total force. This study considers attrition to civilian life. The definition of attrition includes all losses to the military, including separations at the completion of the enlistment term and at retirement as well as premature losses.

About 20 percent of prior service personnel joining the Army Reserve will leave within the first year and 50 percent will leave within the first two years. Attrition is lower among guardsmen; about 40 percent leave within the first two years. This lower attrition among

[14]Grissmer and Kirby, 1985, 1988.

guardsmen may at least partly be explained by the difference in the demographic composition of the accession cohorts. The Guard tends to enlist a higher proportion of older enlistees and those with more years of prior service; both characteristics tend to decrease attrition.

Although we focus on attrition to civilian life, from the viewpoint of the component, losses to other branches of the military rank equally with losses to civilian life, since all such separations lower readiness and raise the individual component's manpower requirements and costs. Therefore, it is interesting to examine the patterns of transfers from the two components to another reserve component or to the active force. Of those still "in service," i.e., not lost to civilian life after two years, 13 percent of the Army Reserve and 9 percent of Guard enlistees will have transferred. The proportions are much higher by the end of five years.

The study finds sizable differences in attrition among demographic groups. Increasing years of military experience, age, and education are all associated with decreasing rates of attrition. For example, those with less than four years of military experience in the Guard have a two-year attrition rate of 40 percent; those with ten or more years of prior experience at accession have only a 30 percent attrition rate. The difference is even more pronounced for the Army Reserve: 50 percent for those with less than four years of service and 30 percent for those with ten or more years of prior service.

The multivariate model includes, as explanatory variables, both measures reflecting the return from reserve service and demographic characteristics of the individual at accession.

Increases in military pay significantly reduce the rate of attrition at any point in time; a 10 percent increase in average drill pay reduces attrition by about 4.5 percent in the Guard and by 9.5 percent in the Army Reserve. Both civilian pay and unemployment are significant and of the expected sign. Higher civilian pay increases attrition and higher unemployment reduces attrition, although both these effects are smaller than those associated with changes in reserve pay.

The results on the effects of bonuses on attrition are mixed. The affiliation bonus for prior active duty personnel is associated with lower attrition but the effect is not statistically significant. The preponderance of evidence suggests that reenlistment bonuses do not significantly affect attrition.

As in the descriptive analysis, individual characteristics are strongly related to attrition. Older individuals (age 36 or older) have attrition rates that are 30 to 40 percent lower than attrition rates for those age 25 or younger. Differences in education have large, significant effects on attrition; after controlling for other variables, those without a high

school degree have an attrition rate that is higher by 18 to 25 percent than that of high school graduates in the two components. Those with prior *active* service have a higher attrition rate than those who have previously served in the reserves. This may be partly due to differences in information and expectations: those with prior reserve service are more likely to know what the reserve job involves than those who had previously served only on active duty.

The results reported here on the attrition behavior of prior service personnel highlight the importance of economic factors in the reservist's separation decision.

POTENTIAL PROBLEMS IN THE EXPERIENCE MIX OF RESERVE PERSONNEL

Solving problems of shortages with more flexible compensation can still leave reserve manning problems due to an inefficient mix of personnel. Whereas authorized requirements specify a skill and grade level, the year of service experience mix can vary markedly. Each position can be filled by individuals with more or fewer years of reserve and active service. Filling positions with older, more experienced people will raise personnel costs, and needs to be justified by increased productivity of more experienced personnel and lower accession and recruiting costs. In general, these judgments about the best experience mix need to be made at the individual skill level. Older individuals in combat positions may not raise performance, however, experience may pay off for pilots and doctors. Here we will describe some strong trends toward more experience in service forces without making judgments about the more difficult area of productivity.

Current 15-year projections of the enlisted experience mix in the Selected Reserve forces show strong increases in the number of reservists with more than 15 years of service. The number of enlisted reservists reaching retirement eligibility (i.e., with 20 good years of service) will almost double between FY85 and FY99. The trend toward a more senior force is the result of several factors. The transition to an all-volunteer force has meant that more individuals from an entering cohort will reach retirement. Individuals entering since 1973 have reenlisted at significantly higher rates and stayed longer in the reserve than their earlier draft-motivated counterparts. The volunteer cohorts which began in 1973 have experienced strong retention and will be reaching retirement eligibility beginning in 1993 and thereafter.

The reserve also enlisted a higher proportion of prior service enlistees in the 1970s because of the availability of Vietnam veterans.

These veterans often entered the reserve three to five years after separating from the active service. Veterans who entered service between 1966 and 1972 will be reaching retirement eligibility in the 1990s.

Finally, the initiation of reenlistment bonus payments for enlisted personnel in 1978 to reservists with less than ten years of service has had the effect of keeping more people in the reserve during their mid-career phase, and most of these individuals will stay for retirement eligibility. In addition, the large real pay increases given in 1981 and 1982 to military personnel combined with high unemployment rates at that time also increased retention and the number of people staying until retirement eligibility.

The Selected Reserve officer force also shows strongly increasing seniority, and large increases in the projected number of retirees. The officer corps has an unusually high number of officers in the 13 to 20 year of service groups, and these officers will reach retirement eligibility in the next ten years. Unlike enlisted personnel, reserve officers have always been volunteers and no increased retention was experienced due to the all-volunteer force. The primary reasons for the increasing seniority of the officer force are its dependence on Vietnam veterans—especially in pilot and medical positions—and the increased real pay in 1981 and 1982.

The current and projected more senior mix of the reserve officer and enlisted force means higher budgetary costs in the coming years for basic pay and retirement outlays. It also reinforces the need to analyze the desirable mix of personnel for individuals with more than 20 years of service. The structure of the current retirement system encourages individuals to stay far beyond 20 years of service because pay is high for these years, and additional service means higher retirement pay. Also, leaving the reserve means complete loss of reserve income since reserve retirement pay does not start until age 60. Since it is difficult to find other "moonlighting" jobs or to work more primary hours[15] to make up for the lost income, reserve separation means lost income until age 60. The lost income comes at a time when family financial responsibilities can be high from factors like college costs. Reservists are understandably reluctant to leave, and reserve units may be reluctant to separate senior personnel. This has resulted in many reservists in senior grade positions over 45 years of age, and a perception on the part of many that age is a problem for senior reserve personnel. The increasing number of reservists moving beyond 20 years of service

[15]Senior individuals in the reserve are highly self-selected and include those whose primary jobs do not offer additional paid hours of work.

could exacerbate this problem unless changes are made in incentives to stay beyond retirement eligibility.

However, the analysis of this issue is complicated by the need to distinguish part-time personnel from civilian technicians and full-time Guard/Reserve personnel. The latter two groups have a disproportionately large proportion of personnel with 25 or more years of service. While full-time personnel are approximately 11 percent of Selected Reserve personnel, they constitute one-third of all Selected Reservists with 26 or more years of service. This means that full-time personnel occupy a disproportionate share of senior ranks in the reserve.

Distinguishing these types of personnel is important because their motivation to stay arises from three different retirement systems. Part-time personnel qualify under the reserve retirement system, whereas full-time military technicians qualify for civil service retirement and Active Guard Reserve (AGR) and Training and Administrative Reserves (TARS) qualify for active duty retirement benefits. Adjusting reserve compensation and the retirement system structure would only affect part-time personnel.

The presence of three types of personnel with differing retirement systems among senior personnel makes analysis of the part-time system harder because they do not operate independently of each other. Each of these types of individuals competes for senior grade levels within the unit. Full-time personnel may be more successful in this competition, thereby reducing promotion opportunities and longevity for part-timers. This means that the presence of full-timers may operate as a natural constraint on part-time personnel, and reduce their tendency to stay beyond 25 years of service. Thus, reducing the part-time reserve retirement system can only address part of the "problem" of older reservists simply because it will not affect the more numerous and older full-time force. Policy changes may also be required in the retirement systems for full-time personnel, or corresponding policies in the age at which full-timers are allowed to enter the system.

POTENTIAL PERSONNEL SHORTAGES PRIOR TO AND DURING MOBILIZATION

A reserve compensation system that produces adequate peacetime manning and training levels may still leave a critical gap in meeting national security objectives. The objective of the reserve system is to augment the active components with trained units/individuals when

needed both for deterrence purposes as well as during war and other national emergencies. How well this objective is met is partly a function of compensation. In particular, several events can occur which can reduce the effective service provided by reservists. These include:

- Separation from reserve service during crisis, but prior to mobilization;
- Failure to mobilize; and
- Normal ETS separation after mobilization or during wartime.[16]

The payoff from years of investment in training for reservists is service either during wartime or other crises. How many individuals serve and how long they serve in wartime/crises determine the return from the training investment. The reserve compensation system should be structured to provide a smooth transition for individuals into the active compensation system during this period. Unfortunately, there is an inherent weakness in the compensation system that may well cause or exacerbate problems during and after mobilization.

Little attention has been paid to the significant loss of income that many reservists will encounter when mobilized. Upon mobilization, reservists will be paid on active pay scales corresponding to their grade and years of service; however, the active duty pay may not match their income from civilian jobs, leading to a potentially large decrease in income. Direct evidence on the potential effect of mobilization on the income of reservists is obtained from the 1986 Survey of Reserve Forces. Respondents were asked what would be the effect on total income of being mobilized for 30 days or more. That reservists face possibly serious financial consequences of sudden call-ups to duty is amply evidenced by the proportion (Table 4.7) reporting moderate or serious decreases in income.

There is no empirical evidence indicating that substantial loss of income would be a factor during mobilization and wartime. However, one might hypothesize that those facing ETS or retirement decisions during mobilization and wartime would take the possibility of extended income loss into account in making these decisions. (Of course, under severe crisis conditions, individuals may not have the choice to voluntarily leave the service.) From the viewpoint of simple equity, the potentially significant loss of income facing service families is an issue that needs to be addressed. If not dealt with, families of reservists could encounter loss of homes, inability to deal with health crises, or

[16]In national emergencies serious enough to warrant mobilization, it is entirely possible that reservists will not have any choice regarding separation. We are concerned here with those situations in which personal choice is still allowed.

Table 4.7

INCOME STATUS AT MOBILIZATION

Question: If you were mobilized for 30 days or more, would your total income (increase greatly, increase somewhat, remain the same, decrease somewhat, decrease greatly)?

Grade	Decrease Somewhat	Decrease Greatly
Enlisted		
E-3	19.7	25.8
E-4	19.8	22.5
E-5	22.6	29.2
E-6	26.8	33.5
E-7	30.8	31.3
E-8	33.1	26.8
E-9	40.3	21.5
Total	24.1	28.3
Officer		
O-1	16.4	13.2
O-2	22.5	17.5
O-3	24.7	23.8
O-4	22.4	30.3
O-5	27.0	29.4
O-6	22.5	35.9
Total	23.3	25.8

SOURCE: 1986 Reserve Components Survey, Q.117.

other hardships at precisely the time when adjusting to extended separation from spouses. Political pressure during mobilization might call for special legislation. Planning in advance is preferred to dealing with the situation at the time of mobilization. Advance planning would also considerably speed up any aid given to families since determining individual needs might require collection of civilian income data. Routine collection of such data in advance would ensure prompt payment of benefits.

V. TRAINING READINESS ISSUES RELATED TO COMPENSATION

The structure of compensation can affect not only personnel turnover, but also "skill turnover." Training readiness requires that reserve authorizations be filled with individuals qualified in their military skill. However, MOS (military occupational specialty) qualification levels are significantly below 100 percent even for those units fully manned. We explore here the causes of low MOS qualification levels for Army reservists and guardsmen using the 1979 and 1986 Reserve Survey. We conclude that fully manned units do not mean fully qualified individuals in units, and proper authorizations and incentives are not present to achieve fully qualified units. Compensation-related incentives are a part of the solution to this problem.

Achieving higher levels of training readiness also means more intense training for certain reserve units. Higher intensity training will become critical if the reserve force has to take on more complex wartime missions. Higher training intensity means additional training time for individual members. However, more training time without corresponding changes in compensation could lead to higher turnover and loss of key reservists. First, we present evidence on attrition rates of Army Guard units that are undergoing the intense and extended training associated with attendance at the National Training Center. Second, we review data from the 1986 Survey of Reservists to determine the relationship between reenlistment intention and expressed willingness to provide extra training time.

The final subsection presents data from the 1986 survey on the perceptions of reservists regarding problems facing the reserve today; comparative analyses of the responses to the 1979 and 1986 surveys allow us to see, to some extent, how these perceptions have changed over time.

ANALYSIS OF MOS QUALIFICATION LEVELS

Recruit training in an occupational specialty is an important prerequisite for unit readiness. In the active force, full-time recruits typically receive several months of intensive training in an occupational speciality before they are assigned to a unit. Individual skill training is inherently more complex in the reserve force, because recruits are

available on a part-time basis at locations far from formal service training facilities. What is the extent of individual skill training in the reserve components? How quickly can new reservists be trained? What are the sources and quality of reserve occupational training? We can answer these types of questions by describing the nature and patterns of enlisted reserve occupational training. The focus of our research is on Selected Reservists in the two largest elements of the reserve component: the Army National Guard (ARNG) and the Army Reserve (USAR). The primary data sources are the 1979 Reserve Force Studies Survey and the 1986 Reserve Components Survey.

A primary measure of individual training readiness in the Army is military occupational specialty qualification. Qualification means that the soldier can adequately perform a prescribed set of duties in a particular skill. Junior personnel in pay grades E-1 through E-4 will almosts always have MOS qualification in a single primary specialty (PMOS). Senior enlisted personnel are likely to be cross-trained in other specialties related to their PMOS, and they are awarded secondary (SMOS) or additional (AMOS) specialties when they satisfy the requirements for other skills. Training readiness is enhanced when a large share of unit personnel are MOS qualified for their current assignment.

In addition to MOS qualification, this research examines patterns in the duty qualification of reserve component personnel. By duty qualification, we mean that the individual's PMOS (three-character MOS) matches his duty MOS (DMOS). Duty qualification indicates whether the soldier is assigned to a skill in his primary area of training. As such, duty qualification is a measure of how well matched assignments are relative to training. The duty qualification measure is introduced to examine individual training readiness using the 1986 Reserve Components Survey.

How does duty qualification compare with MOS qualification in an assigned specialty? Since junior personnel are usually trained only in one skill, duty qualified soldiers will usually be MOS qualified in their assigned specialty. In some cases, however, PMOS may be designated, but not awarded, so the soldier could be duty qualified but not MOS qualified in his assignment.[1] For senior personnel, retraining is common, so a soldier who is not assigned in his PMOS may be assigned in a SMOS or AMOS. Long-term assignments in a SMOS or AMOS will lead to their being redesignated as the soldier's PMOS, because Army regulations require PMOS reclassification when a soldier is promoted

[1]The 1986 Reserve Components Survey excludes personnel in initial active duty training (IADT), so surveyed members have all completed an initial training period.

in a MOS other than the primary. In general, then, we expect the duty qualification rate to be higher/lower than the MOS qualification rate in the assigned skill for junior/senior personnel. If a member remains assigned to a given specialty, duty qualification and MOS qualification in an assigned skill will become increasingly similar measures, because members untrained in an assigned skill will receive training and because members with a SMOS or AMOS in the assignment will eventually become reclassified. Duty qualification and MOS qualification in assigned skill are closely related concepts of training readiness, so we expect similar patterns for each type of qualification.

Research Approach and Hypotheses

The training of new reserve component recruits depends on whether they have previous active duty military experience. Recruits with prior active duty service will have previous training in basic soldier skills and be qualified in a military specialty.[2] Ideally, the local reserve component would be able to match a new prior service recruit's military skill with an available job assignment. When job matches are not available, the prior service recruit will learn a new skill through supervised on-the-job training (SOJT) in the reserve unit. New prior service recruits will not become fully qualified in their new skill for some time, because they only work part-time and much of the regular drill time may not be spent practicing individual job skills. Thus our hypothesis is that many prior service recruits will be assigned in their active duty skill, but unmatched recruits will gain qualification slowly through SOJT. However, since new nonprior service recruits are generally trained in skills that are needed in the local unit, we would expect that the nonprior qualification rate after training should approach unity. In addition, nonprior service recruits receive full-time active duty training in a military skill, so they are likely to become skill qualified quicker than nonmatched prior service personnel who receive part-time SOJT in a new skill.

After initial training and qualification in a skill, recruits may subsequently become assigned to a different job assignment and require retraining. This type of mismatching may reflect several factors:

- **Reservist relocation.** Experienced reserve personnel may relocate and change units. Duty assignments available in the new unit may require training in a different skill.

[2]In this research, "prior service" refers to previous active duty experience other than IADT for the Guard or Reserve. In some reserve studies, prior service individuals are defined as those with previous experience in the active or any other reserve component.

- **Staff misallocations**. Reservists may be trained in skills that become unneeded or are unexpectedly overstaffed in the local unit.
- **Civilian transferable skills**. The recruit may want retraining to acquire skills that are transferable to civilian employment.
- **Promotion openings**. Retraining may be needed for promotion, because the unit has no higher grade openings in the initial occupation.
- **Promotion diversification**. Noncommissioned Officer (NCO) promotion requires training in several occupations. A soldier may be unqualified in his current assignment because he is becoming qualified in the new skill through on-the-job training.

Retraining due to relocation and staff misallocations are reserve component problems that do not arise in the active force. In the active component, trained soldiers are assigned and relocated as unit needs change. Reserve units must depend on the local labor market for staffing and retrain available soldiers to fill available positions. Since many reservists have little labor market experience, they change civilian employers and relocate frequently. As a result, retraining may be needed for job assignments available in the new unit.

The primary reasons for retraining are likely to differ between junior (E-1 through E-4) and senior (E-5 through E-9) grade personnel. Younger, less experienced civilian workers are more likely to relocate, so relocation is probably more prevalent among younger junior level reservists. New senior level prior service recruits may also relocate at a high rate until they become attached to the local civilian labor market. Retraining for civilian acquired skills is also more common for junior level personnel who have not yet settled on a civilian career path. Retraining for promotion opportunities is *relatively* more important for senior than junior grade reservists, although other factors may be equally important reasons for retraining among senior personnel. Staff misallocations are the main reason why prior service personnel require retraining in their initial reserve unit, but these misallocations may be equally likely for junior and senior personnel. Misallocations of prior service personnel depend on the propensity of an individual with a given skill to join the reserves, the propensity for the same skill to be available in the local area, and the propensity of the individual to insist on changing skills. Thus, we would expect that the qualification rate of a year group will be degraded by personnel turbulence and associated retraining. The sources of the turbulence depend on prior service status and grade level.

In the active force, soldiers are retrained through full-time OJT or in an active component school. Civilian employment obligations preclude most reservists from retraining during a period of full-time service in an active component school. Rather, reserve retraining is typically achieved through part-time on-the-job training in the reserve unit, training in a reserve component school, civilian acquired skills and education, or an Army correspondence course program. These training modes are less intensive than active duty training, so qualification in the new skill is protracted. Non-active force training is also inherently less uniform than active duty training because the training program is designed and supervised by local unit personnel. Because individual skill training modes are more diverse and more time consuming in the reserve than in active component units, personnel remain unqualified in new assignments for longer periods.

Patterns of Reserve Component Training

Nonprior Service. Among new nonprior service recruits, active duty training is the dominant training mode. Table 5.1 shows that about 80 percent of the guardsmen/reservists with one year of reserve service have active duty training in their PMOS. Reliance on active duty training declines with years of service because more personnel are reassigned and require retraining in another specialty. Active duty PMOS training is more common in the USAR than ARNG. This difference may reflect either more USAR reliance on an active duty

Table 5.1

PROPORTION OF NONPRIOR SERVICE PERSONNEL WITH ACTIVE DUTY TRAINING IN PMOS

Years of Reserve Service	Army National Guard	Army Reserve
1	0.765	0.829
2	0.746	0.815
3	0.740	0.800
4	0.673	0.775
5	0.637	0.719
6+	0.451	0.560

NOTE: Results based on 1986 Reserve Components Survey.

training mode or less USAR turbulence among nonprior service personnel.

Table 5.2 shows the sources of PMOS training for those soldiers not trained in an active duty mode. The dominant alternative to active duty training is OJT in the soldier's reserve component unit. Correspondence training is also a common training mode, particularly among soldiers with five or more years of service. Civilian training is a more common training source in the USAR than the ARNG.[3] In each component, civilian training relevant to the PMOS is more common than correspondence training among inexperienced soldiers, but the pattern reverses for soldiers with five or more years of experience.

Most nonprior service reservists have civilian jobs that are not related to their reserve job, so their civilian experience has no direct effect on their reserve skill. Table 5.3 shows that over 60 percent of the reservists have civilian jobs that are not at all similar to their reserve job. As we observed in Table 5.2, the USAR is better able to take advantage of civilian skills than the ARNG: 17 percent of USAR personnel are in similar or very similar civilian jobs as compared with only 11 percent of ARNG personnel. This difference probably reflects the fact that 37 percent of nonprior service ARNG personnel are in combat occupations with no civilian counterpart as compared with 14 percent of nonprior service USAR personnel in combat occupations.

Table 5.2

ALTERNATIVES TO ACTIVE DUTY PMOS TRAINING FOR NONPRIOR SERVICE PERSONNEL
(Proportion trained in each alternative)

Alternative	Army National Guard	Army Reserve
OJT in civilian job	0.132	0.192
Formal civilian school	0.055	0.132
OJT in reserve component	0.846	0.738
Correspondence course	0.236	0.278

NOTE: Results based on 1986 Reserve Components Survey. Proportions do not sum to unity because individuals may be trained in more than one mode.

[3]ARNG has many more combat jobs than the USAR. Since combat training has no civilian counterpart, it is not surprising that guardsmen are less likely than Army reservists to have civilian training applicable to their PMOS.

Table 5.3

SIMILARITY OF CIVILIAN AND RESERVE JOBS FOR NONPRIOR SERVICE PERSONNEL
(Proportion in each alternative)

Similarity of Civilian and Reserve Jobs	Army National Guard	Army Reserve
Very similar	0.054	0.088
Similar	0.054	0.079
Somewhat similar	0.121	0.142
Not similar at all	0.657	0.582
No civilian job	0.113	0.108

NOTE: Results based on 1986 Reserve Components Survey. Proportions may not sum to unity because of rounding.

An indirect measure of job skills is time spent working in the PMOS. Presumably, soldiers will become more proficient as they practice their trained skill. OJT skill training will proceed more rapidly if the soldier has more time available working in the skill. Table 5.4 shows that many reservists spend little time working in their primary skill area. The pattern of time allocation varies considerably between junior and senior grades and little between components. About 50 and 30 percent of nonprior service junior and senior grade personnel, respectively, spend less than half of their time working in their PMOS. Over 45 percent of the senior grade soldiers in each component spend more than three-fourths of their time in their primary skill. Job proficiency and OJT training of junior grade personnel must be hampered by the modest share of time available to work in their skill area.

Prior Service. The most important factor affecting the initial skill training of prior service personnel is whether their reserve component job assignment is the same as their previous active duty job assignment. If the soldier's active duty skill cannot be matched in the local unit, the soldier will be retrained. Table 5.5 shows how reliance on active duty training declines as prior service soldiers accumulate more and more reserve component experience. The match of active to reserve skill is much lower after four years in the reserve than after one year, because soldiers who stay several years are more likely to be retrained due to relocation or available promotion opportunities. The match of active and reserve skills differs considerably across components and grade levels. Fewer senior guardsmen are matched than

Table 5.4

SHARE OF TIME SPENT WORKING IN PMOS FOR NONPRIOR SERVICE PERSONNEL
(Proportion in each alternative)

Share of Time Spent Working in PMOS, percent	Army National Guard		Army Reserve	
	Junior	Senior	Junior	Senior
None	0.081	0.040	0.109	0.085
1–24	0.206	0.127	0.252	0.148
25–49	0.174	0.140	0.173	0.126
50–74	0.190	0.182	0.180	0.173
75–99	0.191	0.247	0.176	0.206
100	0.158	0.262	0.110	0.263

NOTE: Results based on 1986 Reserve Components Survey. Proportions may not sum to unity because of rounding.

junior guardsmen, but more senior Army reservists are matched than junior reservists. Among both junior and senior grade personnel, the USAR does a much better job of matching reserve to active jobs than the ARNG. These differences in the match rate reflect many factors including the propensity of an individual with a given skill and grade to join the reserve component, the propensity for the same skill to be available in the local area, and the propensity of the individual to insist on changing skills.

The alternative training modes for nonmatched prior service personnel are used in about the same manner as for nonprior service reserve personnel. Table 5.6 shows that the predominant nonactive training mode is OJT training in the local reserve unit.

As for nonprior service reservists, few prior service reservists have civilian employment in a job related to their reserve skill. Table 5.7 shows that over 60 percent of the reservists have jobs that are not at all similar. USAR jobs are slightly more comparable with civilian employment than ARNG.

Table 5.8 shows that prior service personnel, like nonprior service personnel, spend little time working in their primary skill. About 45 and 30 percent of junior and senior level soldiers, respectively, spend less than half of their time working in their PMOS. Most senior level soldiers spend more time in their PMOS than junior level soldiers.

Table 5.5

SHARE OF PRIOR SERVICE RESERVISTS WITH SAME ACTIVE AND RESERVE PMOS

Years of Reserve Service	Army National Guard		Army Reserve	
	Junior	Senior	Junior	Senior
1	0.371	0.289	0.476	0.563
2	0.332	0.291	0.417	0.454
3	0.318	0.281	0.338	0.409
4	0.263	0.250	0.312	0.341
5	0.292	0.209	0.313	0.284
6	0.210	0.220	0.283	0.299
7+	0.258	0.189	0.271	0.227

NOTE: Results based on 1986 Reserve Components Survey.

Table 5.6

ALTERNATIVES TO ACTIVE DUTY PMOS TRAINING FOR PRIOR SERVICE PERSONNEL
(Proportion trained in each alternative)

Alternative	Army National Guard	Army Reserve
OJT in civilian job	0.153	0.171
Formal civilian school	0.052	0.093
OJT in reserve component	0.845	0.761
Correspondence course	0.274	0.328

NOTE: Results based on 1986 Reserve Components Survey. Proportions do not sum to unity because individuals may be trained in more than one mode.

Table 5.7

SIMILARITY OF CIVILIAN AND RESERVE JOBS FOR PRIOR SERVICE PERSONNEL
(Proportion in each alternative)

Similarity of Civilian and Reserve Jobs	Army National Guard	Army Reserve
Very similar	0.075	0.101
Similar	0.058	0.074
Somewhat similar	0.114	0.136
Not similar at all	0.676	0.614
No civilian job	0.075	0.074

NOTE: Results based on 1986 Reserve Components Survey. Proportions may not sum to unity because of rounding.

Table 5.8

SHARE OF TIME SPENT WORKING IN PMOS FOR PRIOR SERVICE PERSONNEL
(Proportion in each alternative)

Share of Time Spent Working in PMOS, percent	Army National Guard		Army Reserve	
	Junior	Senior	Junior	Senior
None	0.121	0.048	0.132	0.069
1–24	0.168	0.120	0.190	0.128
25–49	0.141	0.106	0.151	0.117
50–74	0.167	0.179	0.186	0.155
75–99	0.197	0.228	0.170	0.230
100	0.206	0.319	0.170	0.302

NOTE: Results based on 1986 Reserve Components Survey. Proportions may not sum to unity because of rounding.

MOS Qualification in Assigned Skill

Junior Personnel. Table 5.9 describes how the rate of MOS qualification changes with years of service for junior enlisted personnel. The table shows that the qualification rate increases rapidly during the first year and into the second year. After two years of service, the learning curves are quite flat for nonprior service soldiers and

moderately increasing for prior service (PS) soldiers. The learning curves for nonprior and prior service guardsmen are very similar. In the Army Reserve, prior service personnel have much lower qualification rates than nonprior service personnel, with the gap closing somewhat as years of service increase.

The most surprising aspects of the learning curves described in Table 5.9 are that the period of steep ascent lasts two years and that 15 to 30 percent of personnel with six years of service remain unqualified in their assigned occupation. For nonprior service personnel, we had expected that most recruits would complete individual active duty training and become qualified during their first year. The results show that substantial numbers are becoming qualified during their second year and that many remain unqualified thereafter. Many prior service recruits are qualified by virtue of their active duty skill training, and mismatched recruits are typically given on-the-job training in their new specialty.

After six months of reserve service, prior service guardsmen have qualification rates 14 percentage points higher than Army reservists. This difference is surprising since guardsmen are less likely than Army reservists to be matched with their active duty skill (Table 5.5).[4]

Table 5.9

PREDICTED MOS QUALIFICATION RATE FOR E-1–E-4 BY YEARS OF SERVICE, COMPONENT, AND PRIOR SERVICE STATUS

Years of Reserve Service	Army National Guard		Army Reserve	
	NPS	PS	NPS	PS
0.5	0.589	0.584	0.608	0.443
1.0	0.598	0.611	0.617	0.462
2.0	0.803	0.761	0.758	0.634
3.0	0.813	0.793	0.771	0.660
4.0	0.822	0.818	0.784	0.681
5.0	0.829	0.839	0.796	0.697
6.0	0.836	0.855	0.808	0.708

NOTE: Results estimated from the 1979 Reserve Force Studies Survey.

[4]A possible explanation is that guardsmen were better matched with active duty skills in 1979, but that the Army Reserve was matched better in 1986. The information on active versus reserve job match is based on the 1986 Survey, and the MOS qualification data come from the 1979 Survey. This explanation seems unlikely, however, because we

Apparently, the ARNG is more successful than USAR in quickly retraining and requalifying prior service soldiers in new skills. This success may reflect Guard training in relatively more related active duty skills or shorter qualification periods in Guard skills (i.e., ARNG combat training is shorter than USAR training in predominantly combat support and combat service support areas). Whatever the explanation for higher initial Guard qualification rates, the Guard qualification rate for prior service personnel remains much higher than that of the Reserves even after six years of reserve service.

Unit type affects MOS qualification rates for nonprior service junior personnel but not for prior service personnel. Nonprior service guardsmen in combat support units are about 9 percent less likely to be MOS qualified than guardsmen in combat or combat service support units. Nonprior service recruits in the Army Reserve combat units are 17 percent less likely to be MOS qualified than recruits in other types of units. MOS qualification rates of prior service personnel do not vary significantly with unit type.

One factor that had a critical effect on MOS qualification in all groups was the type of occupational training. MOS qualification through on-the-job reserve training is a much slower process than active duty training. Personnel with formal active duty training are predicted to have MOS qualification rates about 20 to 30 percentage points higher than those of recruits with *on-the-job reserve training* after three years of service. On-the-job reserve training is the primary source of training in current skill for about 40 percent of the junior grade Army reservists. About 42 and 54 percent of the prior and nonprior service guardsmen, respectively, have primarily on-the-job reserve training in their current MOS.

Differences in MOS qualification rates by training types for nonprior service personnel suggest a possible explanation for the relatively flat learning curves. Nonprior service personnel should receive active duty training in an *initial* occupation, but 40 percent of the nonprior service recruits were trained in their *current* MOS assignment through on-the-job reserve training. By implication, substantial numbers of recruits have changed occupations and required retraining. The MOS qualification rates in the *current* occupation may remain low because of unit or occupational turbulence. The 1979 Survey does not contain information on unit or occupation change for junior enlisted personnel, but unit and occupational turbulence can be examined for senior personnel in the 1979 Survey and all personnel in the 1986 Survey.

---

find that duty qualification rates of prior service personnel after one year are also higher in ARNG than USAR.

Individual recruit characteristics are noticeably unimportant in explaining MOS qualification rates. We had expected that factors that affected recruits' supply decisions to enlist or reenlist in the reserves would affect their propensity to become MOS qualified. Recruits who were better suited to the reserves in terms of employment or family situation would presumably adjust their schedules and become qualified more quickly. In fact, no individual recruit characteristics had an important bearing on MOS qualification rates of prior or nonprior service personnel in either the Army Guard or Army Reserve. Although we can only speculate on explanations for the unimportance of recruit supply variables, reserve units may be providing either weak or inconsistent incentives for recruits to quickly complete their skill training.

Senior Personnel. By definition, senior personnel are trained and experienced in some military occupation. Senior-level recruits become unqualified because they are not assigned in their trained occupational field. This type of mismatching may reflect recruit relocation, staff misallocations, retraining in civilian applicable skills, or promotion. Ultimately, some of the turbulence, like cross-training for promotion, may improve unit readiness, but protracted retraining leaves many jobs poorly staffed. Unit readiness is adversely affected by mismatches because senior personnel will not be MOS qualified in their assigned occupations.

Table 5.10 shows how the MOS qualification rate for senior personnel changes with years of reserve service. The results hold constant the propensity of individuals to change units (discussed below), so the qualification patterns by years of service reflect the time required to learn a new skill as well as promotion-induced turbulence in the qualification rate. The qualification curves show slow steady improvements in the qualification rate with years of service, but no steep initial period where the qualification rate improves rapidly as for junior personnel. New prior service personnel have qualification rates substantially lower than other senior personnel because they have some difficulty matching their active duty skill to the requirements of local reserve units. Even after six or eight years of reserve service, however, the qualification rate of prior service personnel remains lower than that of nonprior service personnel. The difference may reflect a different emphasis on the training and assignment of prior and nonprior service personnel. Alternatively, prior service personnel may be retrained more frequently, because they have better promotion opportunities than nonprior service personnel.

An important factor affecting the MOS qualification of senior personnel is retraining due to a change in unit. Table 5.11 shows that 40 to 45 percent of senior soldiers have changed units at least once.

Table 5.10

PREDICTED MOS QUALIFICATION RATE FOR E-5–E-9 BY YEARS OF SERVICE, COMPONENT, AND PRIOR SERVICE STATUS

Years of Reserve Service	Army National Guard		Army Reserve	
	NPS	PS	NPS	PS
1	—	0.736	—	0.691
2	—	0.759	—	0.718
4	0.853	0.795	0.824	0.765
6	0.869	0.823	0.830	0.802
8	0.882	0.845	0.840	0.830
10	0.892	0.861	0.855	0.852
15	0.910	0.887	0.901	0.884
20	0.918	0.895	0.946	0.894

NOTE: Results estimated from the 1979 Reserve Force Studies Survey. MOS qualification rates are not shown for NPS E-5–E-9 at 1 and 2 years of service because very few NPS recruits achieve these ranks with so few years of service.

About 10 percent of senior personnel have been with four or more different reserve component units. Prior and nonprior service personnel are equally likely to have changed units in each component, but prior service personnel have much shorter average tenure than nonprior service personnel, so prior service personnel change units at a faster rate. Most of these changes are presumably induced by geographic relocation of soldiers, although some unit transfers might occur for retraining and promotion possibilities.[5]

Reservists who change units are much less likely to be MOS qualified than those who do not. Table 5.12 shows that the probability of MOS qualification for prior service personnel falls by about 20 percentage points with a unit change. The qualification rates for nonprior service personnel fall 8 and 15 percentage points, respectively, for guardsmen and reservists. In each group, the MOS qualification rate improves with each additional year in the new unit, as mismatched soldiers gain training in new skills. The qualification rate after a unit change does not recover to the pre-unit change level, however, for at

[5]Geographic dispersion of reserve component units makes it costly for many members to change units for promotion opportunities. Soldiers are unlikely to relocate for better reserve promotion opportunities, because reserve employment is a secondary, part-time job.

Table 5.11

RESERVE EXPERIENCE OF E-5–E-9 PERSONNEL BY COMPONENT AND PRIOR SERVICE STATUS

	Army National Guard		Army Reserve	
Characteristic	NPS	PS	NPS	PS
Average years in reserve	11.75	7.48	9.28	7.29
Number of units (percent)				
1	59.76	60.27	53.45	56.07
2	21.44	21.90	23.19	24.70
3	8.76	8.58	14.16	8.88
4+	10.04	9.26	9.20	10.35
Average years in current unit if changed	6.05	4.22	4.57	3.73

NOTE: Results estimated from the 1979 Reserve Force Studies Survey.

least three years. The recovery rate for nonprior service personnel in the USAR is particularly slow, where the qualification rate in the new unit remains 4 percentage points lower than the pre-change rate after five years.

MOS qualification rates do not vary much with unit type. The qualification rates for nonprior service guardsmen and prior service Army reservists do not vary in a statistically significant manner across combat, combat support, and combat service support units. Prior service guardsmen in combat and combat support units have MOS qualification rates 6 to 7 percentage points lower than those in combat service support units. In USAR, senior grade nonprior service personnel in combat support units have MOS qualification rates about 8 percentage points lower than those in combat service support.

As with junior personnel, the MOS qualification rate for senior personnel was sensitive to the source of skill training. Guardsmen with primarily on-the-job training in their current MOS are about 20 percentage points less likely to be MOS qualified in their assigned skill than guardsmen with training in a formal service school. Nonprior and prior service Army reservists are 8 and 14 percentage points less likely to be qualified if they have on-the-job reserve training. As with junior

Table 5.12

UNIT CHANGE AND MOS QUALIFICATION FOR E-5–E-9 PERSONNEL BY COMPONENT AND PRIOR SERVICE STATUS

MOS Qualification Rate	Army National Guard		Army Reserve	
	NPS	PS	NPS	PS
Before unit change	0.860	0.794	0.864	0.764
After unit change	0.773	0.600	0.716	0.628
Years in new unit				
1	0.804	0.679	0.740	0.700
2	0.832	0.744	0.763	0.759
3	0.855	0.796	0.784	0.806
4	0.876	0.837	0.804	0.843
5	0.894	0.868	0.822	0.872

NOTE: Results estimated from the 1979 Reserve Force Studies Survey. Results are based on prior service recruits changing units after three and four years respectively, for ARNG and USAR. Nonprior service recruits are assumed to change units after six and five years, respectively, for ARNG and USAR.

personnel, on-the-job qualification in a military occupation is substantially more time consuming than formal training school qualification. The source of skill training is a more important issue in the qualification of senior personnel than junior personnel because more senior personnel rely primarily on on-the-job reserve training. On-the-job training is the primary skill training for 66 and 55 percent of the senior grade Army guardsmen and reservists, respectively.

As with junior grade personnel, the MOS qualification rate of senior personnel does not vary much with the individual supply characteristics of the individual reservist. This may be an indication that units do not provide strong incentives for members to complete their MOS skill training.

Duty Qualification

Junior Personnel. The pattern in duty qualification for junior grade prior service personnel in the 1986 Survey bears a close resemblance to the pattern of MOS qualification in the 1979 Survey. Table 5.13 shows that prior service guardsmen initially have a higher duty qualification rate than USAR personnel, but the learning curve is steeper in the USAR than ARNG, so the duty qualification rates are equal after six years. In each component, however, 25 percent remain unqualified after six years. A possible explanation for the higher initial qualification rate in the ARNG than the USAR might be that the Guard was more successful in utilizing the active duty skill training of new entrants. In fact, however, the survey results discussed in Sec. III showed that 37 percent of the guardsmen and 48 percent of the reservists are matched with an active duty skill. By implication then, the Guard must be more successful in quickly retraining prior service personnel during the first year than the Army Reserve.

The pattern in the duty qualification of nonprior service personnel is what we had expected although somewhat different from the pattern in MOS qualification in the 1979 Survey. Our hypothesis was that qualification rates would initially be quite high because nonprior service recruits receive active duty training in skills needed in local units. Table 5.13 shows qualification rates of 90 percent after one year. Occupational turbulence, however, makes the duty qualification rate decline after the first year. The predicted qualification rates in Table 5.13 hold constant the probability of unit change (discussed below), so

Table 5.13

PREDICTED DUTY QUALIFICATION RATE FOR E-1–E-4 BY YEARS OF SERVICE, COMPONENT, AND PRIOR SERVICE STATUS

Years of Reserve Service	Army National Guard		Army Reserve	
	NPS	PS	NPS	PS
1.0	0.928	0.644	0.881	0.546
2.0	0.923	0.672	0.862	0.610
3.0	0.918	0.697	0.842	0.663
4.0	0.913	0.720	0.823	0.704
5.0	0.909	0.740	0.803	0.736
6.0	0.905	0.758	0.784	0.759

NOTE: Results based on 1986 Reserve Components Survey.

the decline in qualification rates for nonprior service personnel must reflect other factors. Duty qualification rates do not decline much in the Guard, but in the Army Reserve, the duty qualification rate of nonprior service junior personnel falls from 88 to 78 percent after six years. Apparently, the Reserve has difficulty keeping nonprior service personnel matched with their training skill.

One factor that has a major effect on duty qualification is unit change. Reserve personnel frequently change units, and retraining is often required for the job assignment available in the new unit. Table 5.14 shows that about 30 percent of prior service personnel have changed units after three years in an Army Reserve component. Nonprior service personnel have fewer unit changes than prior service personnel, with an average of 16 and 22 percent of the ARNG and USAR personnel changing units during the tabulated period. The greater mobility of prior service personnel probably reflects shorter civilian work experience and a weaker attachment to the local labor market.

Unit change has a large adverse effect on the duty qualification rate. Table 5.15 shows that the qualification typically falls about 16 percentage points with a unit change. Nonprior service USAR personnel are 28 percentage points less likely to be duty qualified after a change than before. In each component and prior service group, the recovery period after a unit change is substantial. After five years, only prior service guardsmen have regained the pre-unit change duty qualification rate.

Table 5.14

PROPORTION OF E-1–E-4 PERSONNEL WITH UNIT CHANGE BY YEARS OF SERVICE, COMPONENT, AND PRIOR SERVICE STATUS

Years of Reserve Service	Army National Guard		Army Reserve	
	NPS	PS	NPS	PS
1.0	0.085	0.109	0.105	0.091
2.0	0.088	0.211	0.131	0.199
3.0	0.130	0.320	0.188	0.295
4.0	0.186	0.430	0.249	0.329
5.0	0.172	0.428	0.318	0.500
6.0+	0.258	0.542	0.402	0.615
Average	0.159	0.307	0.217	0.273

NOTE: Results based on 1986 Reserve Components Survey.

Table 5.15

UNIT CHANGE AND DUTY QUALIFICATION FOR E-1-E-4 PERSONNEL BY COMPONENT AND PRIOR SERVICE STATUS

Duty Qualification Rate	Army National Guard		Army Reserve	
	NPS	PS	NPS	PS
Before unit change	0.928	0.723	0.869	0.701
After unit change	0.781	0.547	0.592	0.538
Years in new unit				
1	0.805	0.615	0.618	0.572
2	0.825	0.675	0.651	0.607
3	0.841	0.726	0.690	0.642
4	0.853	0.769	0.733	0.678
5	0.863	0.805	0.778	0.713

NOTE: Results estimated from the 1986 Reserve Components Survey. Results are based on ARNG and USAR members changing units after three years of reserve service.

Senior Personnel. Table 5.16 shows the pattern of duty qualification for senior grade reserve personnel. Among prior service personnel, ARNG has a qualification rate 8 percentage points higher than the USAR after one year. The higher Guard qualification rate is surprising, because only 29 percent of guardsmen with one year's experience have the same active and reserve skill as compared with 56 percent of Army reservists. As with junior personnel, the Guard is able to offset a much lower active duty skill match rate with a higher qualification rate than the Army reserve. The reasons for this differential are unclear, but it may reflect shorter required training for Guard skills or better matched assignments in skills closely related to previous active duty skill training.

The learning curves for senior prior service personnel are relatively flat, with about 20 percent of the soldiers not duty qualified after six years. The low qualification rate reflects retraining for better promotion opportunities. In part, this low qualification rate may reflect senior personnel that are assigned in their SMOS or AMOS.

Table 5.16

PREDICTED DUTY QUALIFICATION RATE FOR E-5–E-9 BY YEARS OF SERVICE, COMPONENT, AND PRIOR SERVICE STATUS

Years of Reserve Service	Army National Guard		Army Reserve	
	NPS	PS	NPS	PS
1	—	0.735	—	0.650
2	—	0.749	—	0.676
4	0.930	0.773	0.831	0.720
6	0.915	0.792	0.825	0.753
8	0.899	0.806	0.820	0.777
10	0.884	0.817	0.814	0.792
15	0.850	0.830	0.803	0.803
20	0.830	0.824	0.794	0.775

NOTE: Results based on 1986 Reserve Components Survey. Duty qualification rates are not shown for NPS E-5–E-9 because very few NPS recruits achieve these ranks with so few years of service.

As with junior personnel, senior nonprior service guardsmen have higher duty qualification rates at each experience level than Army reservists. The qualification rates for both components decline with years of experience as career turbulence leads to retraining in new skills.

Unit change also has a major influence on duty qualification rates of senior personnel. When reservists relocate for personal or civilian employment opportunities, they will frequently require retraining for positions available with the reserve unit in their new location. Table 5.17 shows that about 40 percent of the guardsmen and 50 percent of the Army reservists have changed units. The higher level of unit change among senior than junior personnel primarily reflects the larger average years of reserve service among senior than junior personnel. With more years of service, senior grade soldiers are at risk of changing units for more years than junior grade soldiers.

Table 5.18 describes how a unit change affects the probability of duty qualification. The immediate effect of a change is to reduce the probability of qualification by about 20 and 28 percentage points, respectively, for ARNG and USAR personnel. The recovery period is very protracted in each component for both nonprior and prior service personnel. Even after five years in the new unit, relocated reservists

Table 5.17

PROPORTION OF E-5–E-9 PERSONNEL WITH UNIT CHANGE BY RESERVE COMPONENT AND PRIOR SERVICE STATUS

Years of Reserve Service	Army National Guard		Army Reserve	
	NPS	PS	NPS	PS
1	—	0.098	—	0.109
2	—	0.148	—	0.160
3–4	0.112	0.280	0.194	0.328
5–6	0.185	0.365	0.273	0.384
7–8	0.286	0.446	0.412	0.432
9–10	0.348	0.377	0.447	0.481
11–15	0.424	0.559	0.585	0.602
15+	0.573	0.800	0.704	0.838
Average	0.396	0.436	0.499	0.488

NOTE: Results based on 1986 Reserve Components Survey.

Table 5.18

UNIT CHANGE AND DUTY QUALIFICATION FOR E-5–E-9 PERSONNEL BY COMPONENT AND PRIOR SERVICE STATUS

Duty Qualification Rate	Army National Guard		Army Reserve	
	NPS	PS	NPS	PS
Before unit change	0.918	0.825	0.874	0.798
After unit change	0.743	0.628	0.588	0.512
Years in new unit				
1	0.756	0.669	0.624	0.570
2	0.768	0.706	0.656	0.622
3	0.780	0.737	0.685	0.669
4	0.790	0.764	0.711	0.710
5	0.800	0.787	0.733	0.746

NOTE: Results estimated from the 1986 Reserve Components Survey. Results are based on nonprior and prior service members changing units after eight and six years of service, respectively.

are less likely to be duty qualified than they were before changing units. The qualification rates for senior nonprior service reservists lag more than 10 percentage points below the pre-change rates after five years in the new unit.

RETENTION EFFECTS OF EXTENDED TRAINING TIME

Empirical Effects of Increased Training Time on Retention—The NTC Experience[6]

Several initiatives have been undertaken to raise the personnel and training readiness of the Army National Guard. These initiatives include equipment modernization and training support, increased levels of full-time manning, increased pay and benefits in the form of enlistment and reenlistment bonus payments and improved G.I. Bill educational benefits, and improved training opportunities. The training opportunities include more participation in overseas deployment training and participation in training at the National Training Center (NTC).

Despite these initiatives and record levels of personnel strength, there remains some skepticism whether Guard and Reserve units can achieve the desired level of readiness within the current programmed training time. For instance, current proposals in Congress attempt to raise Reserve and Guard readiness by increasing for all units the time required for training. The increased training time would add to the existing commitment of two days of drills per month and 14 days of annual training.

Increasing the time required of reservists will almost certainly depress retention levels as members encounter more conflicts with employers and families, and their own leisure time needs. Previous research has established that conflicts with families and employers are two important reasons guardsmen and reservists leave the reserve. Thus, increased training time might—other things equal—increase training readiness and mission proficiency, but reduce retention and perhaps unit strength.

The National Training Center experience is an important initiative for National Guard units for two reasons. First, it provides the most realistic training short of wartime and the longest sustained training exercises undertaken by Guard units. Thus, units encounter problems

[6]David W. Grissmer and Glenda Nogami, *Retention Patterns for Army National Guard Units Attending the National Training Center (NTC)*, U.S. Army Research Institute, Alexandria, Virginia, March 1988.

and training challenges more directly related to combat sustainment and mobilization missions than are encountered in normal Guard training. It therefore provides perhaps the best opportunity for Guard combat units to improve training readiness. Second, it also requires unit personnel to increase training time significantly in preparation for the NTC and during the NTC rotation. The NTC experience provides a test of whether more training time leads to higher attrition in units.

The analysis is based on case studies for the first seven National Guard units to attend the National Training Center, and a statistical analysis of loss data from these and comparable control units (see Table 5.19).

Guard units usually drill on two weekend days a month and for two weeks during annual training each summer. The NTC training increased the time required in three ways. First, unit members were required to deploy for three weeks rather than the usual two weeks for annual training. Second, all units undertake a more intense training schedule in the year preceding NTC—the so-called NTC train-up. The schedule varied among units, but at a minimum required several extra days of drills over the year period, often on the Friday preceding the usual weekend drill period. Many individuals thus had to arrange for time off from civilian jobs for military drills. Third, officers and senior NCOs were required to participate in additional planning sessions that could occupy two or three weekends a month or several weekday nights each month. A decrease in retention under these circumstances might be expected.

Several definitions of attrition were used in the analysis. The first definition measures individual attrition as those leaving the Guard, whereas the second measures attrition as those leaving the unit. The latter definition includes both people who transfer out of the unit as well as people leaving the Guard. For each of the attrition definitions two time periods were used. The first measures the level of attrition from one year before the NTC rotation until six months after NTC. The second definition measures attrition from one year before the NTC rotation until the end of FY85. For the shorter time period we have data from seven units attending NTC. For the longer time period only the three earliest deploying units have a long enough period of time to look at longer run effects.

The results show that both attrition from the unit and from the Guard is higher among reservists participating in NTC training than among reservists in comparable units not attending NTC. For the shorter 18 month period (12 months prior to NTC to six months after) attrition from NTC units was 28.1 percent compared with 1.7 percent for comparable non-NTC units. For attrition out of the Guard the

Table 5.19

NTC AND COMPARISON UNITS BY STATE

State	NTC Units			Comparison Units	
	UIC[a]	Unit	Date	UIC	Unit
Alabama	WPOL	2-152 AR BN	June 1985	WPOJ	1-131 AR BN
Georgia	WPC2	1-108 AR BN	September 1983	WVM2	1-122 INF BN
	WPDA	1-121 INF BN	October 1984	WQV3	1-230 FA BN
	WPDB	2-121 INF BN	March 1985	WPDG	1-214 FA BN
				WQV4	2-214 FA BN
Louisiana	WPQR	3-156 INF BN	August 1985	WPQQ	2-156 INF BN
				WVCA	1-156 AR BN
Minnesota	WPUZ	2-136 INF BN	April 1984	WPUU	1-135 INF BN
			WPUV	2-135 INF BN	
				WPUY	1-136 INF BN
North Carolina	WPJN	2-120 INF BN	June 1985	WQYW	1-119 INF BN
				WPJM	1-120 INF BN
				WPJT	1-252 AR BN
				WPJU	2-252 AR BN

[a]Unit Identification Code.

corresponding rates were 20.8 percent for NTC units and 16.6 percent for non-NTC units. This represents a 29 percent increase in unit attrition and a 25 percent increase in Guard attrition potentially attributable to NTC training. The statistical analysis controls for differences among personnel in NTC and non-NTC units and thus provides more reliable estimates. The results show only slightly smaller effects. For a typical reservist, the attrition probability out of the unit for an NTC unit increased by 25 percent compared with a non-NTC unit. The results show a 21 percent increase for attrition from the Guard.

Each of the seven NTC units analyzed separately shows higher attrition from the unit and six of the seven show higher attrition from the Guard than the comparable non-NTC units. The increases in attrition resulting from NTC experience vary considerably by unit (Table 5.20). For attrition from the Guard the percentage increases in attrition vary from 0 to 49 percent, while for attrition from the unit, the percentage increases vary from 5 to 58 percent. There is no distinct pattern of a decreasing NTC attrition effect for later versus earlier NTC attendance, although there is a clear pattern for the three Georgia units that later attending units had smaller attrition effects than earlier attending units.

To study longer term attrition, we tracked individuals until the end of FY85 for three units. For the first unit we have a period of two years after NTC rotation, and we have one and one-half years and one year following NTC rotation for the second and third units. The main question is whether higher attrition effects are confined to the immediate NTC period or higher attrition continues for longer time periods. As of the end of FY85, the attrition rate out of the Guard for the first unit was 41.5 percent compared with 27.8 percent for the comparison unit. This attrition gap of 13.7 percentage points between this unit and its comparison unit has widened considerably. As of six months after NTC, the respective attrition rates were 32.0 and 22.6—a gap of only 7.4 percentage points. The other two units show little evidence for widening gaps in attrition, and attrition effects for these units appear to be confined to the NTC period.

Our results show that the additional attrition effects were broadly spread among all types of reservists. Our statistical analysis shows that—other things equal—attrition in NTC units was higher for virtually every subgroup tested. The only group that seems to show unusually high attrition effects is that comprised of lower quality personnel (AFQT Category IV and/or non-high school graduate). This would support an hypothesis that at least a portion of the attrition may be due to loss of marginal performers.

Table 5.20

ATTRITION/TRANSFERS IN NTC VERSUS COMPARISON UNITS OVER THE NTC PERIOD BY STATE

State	Separated from the Guard Unit (%)	Transferred to Another Guard Unit (%)	Overall Unit Attrition (%)	Still Remaining in Original Unit (%)	(N)
Alabama					
NTC units	14.8	16.0	30.8	69.2	(533)
Comparison units	14.1	8.4	22.5	77.6	(491)
Georgia: First unit					
NTC units	30.7	1.1	32.0	68.0	(547)
Comparison units	21.5	1.1	22.6	77.4	(1,552)
Georgia: Second unit					
NTC units	24.1	4.9	29.0	71.0	(801)
Comparison units	17.4	4.7	22.1	77.9	(1,531)
Georgia: Third unit					
NTC units	17.4	7.4	24.8	75.2	(771)
Comparison units	15.7	7.8	23.5	76.6	(1,561)
Louisiana					
NTC units	15.6	8.9	24.5	75.5	(649)
Comparison units	13.5	6.6	20.1	79.9	(1,075)
Minnesota					
NTC units	28.4	4.7	33.1	66.9	(821)
Comparison units	23.3	4.5	27.8	72.2	(2,036)
North Carolina					
NTC units	15.2	9.4	24.6	75.4	(792)
Comparison units	10.2	5.4	15.6	84.4	(2,523)

Four hypotheses regarding the reasons for higher levels of unit attrition arise from previous research and from the case studies:

- The additional training time required for NTC causes family conflict leading to separation or transfer.
- The additional training time required for NTC causes employer problems leading to transfer or separation.
- The additional training time causes increased loss of income, vacation time, or threat of job dismissal.

- Tighter physical conditioning, performance, or attendance standards are imposed in preparation for NTC leading to transfer or separation of marginal performers.

Employer and family conflicts become exacerbated by the additional training time required during the NTC train-up and rotation. These conflicts cannot be easily or neatly characterized, but are as diverse as are the family and employer situations of reservists. Employer problems seem to arise more frequently for individuals working for small employers, or as part of small production teams in larger organizations. These individuals are harder to replace and their absence can cause conflict and resentment from co-workers. Employer problems are encountered in larger employers who support the Guard from a corporate perspective, but whose first-line supervisors find employee absence a problem.

Family problems arise from ordinary concerns of not spending enough time with spouse and children, as well as more complex concerns of single parents finding child care and of curtailed child visitation rights for divorced parents. Family conflicts can arise from lost income during annual training, use of family vacation time, and leave without pay to meet Guard obligations. Most younger guardsmen interviewed experienced loss of income during annual training or NTC rotation because military pay did not make up for lost civilian income. Many used personal vacation time and leave without pay to attend extra drills and NTC.

The legal protection for guardsmen that entitles them to military leave and protection from discrimination and dismissal for Guard-related duty clearly is not a panacea for these problems. Some guardsmen we talked with felt they were at a disadvantage in getting jobs, keeping jobs, and obtaining promotion because of Guard duty. Many felt that employers view Guard participation as a negative factor in evaluation. They also realize that employers are smart enough not to explicitly connect Guard duty and job performance and evaluation. In the end, the threat of legal sanctions is a distant and cumbersome process, and most guardsmen have to rely on the goodwill of employers. A majority of guardsmen enjoy employer goodwill, but many do not. If training schedules increase, goodwill will be increasingly tested.

Independent of family conflicts, lost income and vacation time can increase tendencies toward attrition. Both officer and enlisted personnel related concern during interviews about lost income. The problem seems more pronounced for junior enlisted personnel, for whom loss of income can have more severe consequences.

Income loss by reservists occurred in several ways during NTC train-up. The most common way was during the three-week rotation when military pay did not make up for lost civilian pay. Younger reservists are less protected by employer policies which pay full or partial civilian pay during annual training periods. Most younger reservists receive no civilian pay during this period, and the NTC rotation not only caused a loss of income, but military pay arrived later than the normal civilian paycheck, causing a troublesome gap in paychecks.

Lost income also resulted when reservists had to take leave without pay to attend the extra drills and annual training period required during NTC. Some reservists give up lucrative overtime opportunities during this period, and some lost income because bonus payments connected with production quotas was lost because of Friday drills.

For officers, problems seemed to be encountered mostly by the self-employed. Officers are more likely to have liberal employer pay policies, and losses in income and gaps in paychecks may not be as serious. However, several self-employed officers who put in substantial amounts of time in planning saw a deterioration in earnings during this period. Also, for these individuals employer military leave is not applicable.

There are several compensation-related issues that arise in connection with more intense training requirements for the reserve. As we have seen, increased training time for many means actual loss of income. This will be true for that portion of the reserve who receive no civilian income for annual training and whose civilian wage is greater than their reserve wage. This pertains for at least 25 and up to 50 percent of guardsmen. Thus, more time put into the reserves means more income lost. This can also occur if reservists have to take leave without pay to accommodate the extra reserve time or who turn down overtime opportunities because of reserve service. Some individuals put in much unpaid time during the NTC train-up. The fact that reservists meet their reserve commitments speaks to their dedication. However, in the long run these compensation patterns will cause higher attrition and transfers to other units, and need to be remedied.

Evidence from the 1986 Survey of Reserve Forces

For the most part, policy options such as extended training time have been debated in the context of their contribution to unit training objectives such as increased unit cohesion and enhanced mission capability. Extended training time could also enhance individual occupational training if associated with an increased opportunity for soldiers to become qualified in their assigned MOS or greater opportunity to practice acquired MOS skills.

Training gains from extended training, as discussed above, must be weighed against the effect of extended training time on retention.[7] Reservists enlist for part-time employment, and extended time could exacerbate conflicts with family, career, or personal obligations. If extended time causes retention levels to decline, then personnel turnover may leave units in a lower state of readiness.

The 1986 Reserve Components Survey can be used to anticipate the likely retention effect of extended training time should this policy option be put into place more widely. Respondents were asked how likely they were to reenlist in the reserves under three scenarios:

- The current training schedule;
- The current schedule plus two extra four-hour drills per month; and
- The current schedule plus an additional week of annual training.

The remainder of this section examines how reenlistment intentions are affected by extended time for junior and senior grade personnel, respectively. Intention levels are compared across prior and nonprior service recruits in the ARNG and USAR. A reenlistment supply model was created to assess how recruit reserve experience, civilian employment opportunities, demographic characteristics, and family situation affect reenlistment plans. The model was used to predict whether extended time would have a more adverse effect on some types of reservists than others.

Junior Personnel. Table 5.21 shows that extra drills or annual training would reduce the reenlistment rates of junior grade personnel by 7 to 13 percentage points. The retention effects vary systematically across component, prior service group, and policy alternative. The reservists are more adverse to two extra drills per month than to an extra week of annual training. The retention reductions are larger in the ARNG than the USAR for each grade and prior service group. The reenlistment rate of nonprior service is lower than for prior service personnel in each component, and nonprior service personnel are more adverse to each extended time option than prior service personnel.

Average reenlistment rates were lower with extended time, but for the most part, the underlying reenlistment supply parameters were unaltered. For example, reenlistment intentions and wage rate are

[7]A complete analysis of the efficacy of extended time would require an analysis of the costs and gains from the extra training time, as well as a comparison of the costs of other alternatives for achieving similar training readiness objectives. The analysis here is confined to the retention aspects of extended training time.

Table 5.21

EFFECT OF EXTENDED TIME OPTIONS ON THE REENLISTMENT INTENTIONS OF JUNIOR PERSONNEL BY COMPONENT AND PRIOR SERVICE STATUS
(Proportion planning to reenlist)

Service	Current Policy	Two Extra Drills per Month	Extra Week of Annual Training
Army National Guard			
NPS	0.498	0.370 (12.8)	0.396 (10.2)
PS	0.558	0.443 (11.5)	0.462 (9.6)
Army Reserve			
NPS	0.517	0.395 (12.2)	0.443 (7.4)
PS	0.589	0.482 (10.7)	0.517 (7.2)

NOTE: Results based on 1986 Reserve Components Survey. The difference between the proportion reenlisting under current policy and under each option is reported in parentheses.

inversely related, but the size of the relationship is comparable under current policy and extended time scenarios. Extended time would have the following differential effects on reenlistment supply:

- "Fast-track" reservists are less likely to reenlist, i.e., the reenlistment rate reduction is larger for higher pay grades after controlling for time in reserve service
- Reductions are smaller for blacks and Hispanics than for whites and non-Hispanics
- Extended time effects are more adverse for full-time workers than those who are part-time workers, students, or unemployed
- Soldiers with some schooling beyond high school are more adverse to extended time than high school graduates and dropouts

Surprisingly, extended time does not have a differential effect across reserve component occupations, with the exception of prior service guardsmen in combat arms who are less adverse to both extra drills and annual training than are guardsmen in noncombat jobs.

Senior Personnel. Senior personnel are also less likely to reenlist under both extended time options. Table 5.22 shows that the patterns in reenlistment rate reduction closely mirror those for junior personnel, although the percentage point reductions are larger. The anticipated reenlistment rate of senior grade personnel is about 15 percentage points higher than that of junior grade personnel, so the large absolute

Table 5.22

EFFECT OF EXTENDED TIME OPTIONS ON THE REENLISTMENT INTENTIONS OF SENIOR PERSONNEL BY COMPONENT AND PRIOR SERVICE STATUS
(Proportion planning to reenlist)

Service	Current Policy	Two Extra Drills per Month	Extra Week of Annual Training
Army National Guard			
NPS	0.658	0.486 (17.2)	0.494 (16.4)
PS	0.691	0.536 (15.5)	0.558 (13.3)
Army Reserve			
NPS	0.677	0.522 (15.5)	0.562 (11.5)
PS	0.722	0.585 (13.7)	0.623 (9.9)

NOTE: Results based on 1986 Reserve Components Survey. The difference between the proportion reenlisting under current policy and under each option is reported in parentheses.

retention reductions represent comparable proportional reductions. As for junior personnel, reductions are larger in the ARNG than in the USAR, in the extra drill than in the extra annual training scenario, and in nonprior service than in prior service personnel categories.

As with junior grade personnel, a modest number of factors had a differential effect on the reenlistment intentions under the two extended time options. The following factors affected the reduction in reenlistment intentions under both extended time scenarios:

- Blacks and Hispanics are less adverse to extended time than whites and non-Hispanics and
- Full-time workers are more adverse to extended time than part-time workers, the unemployed, and students.

Neither extra drills nor extra annual training would have differential retention effects by occupational area.

LIMITED TIME FOR PLANNING, TRAINING, AND ADMINISTRATIVE WORK

The most recent evidence on readiness problems facing the reserve comes from responses of officers and enlisted personnel to a series of questions in the 1986 Reserve Components Survey. The questions focused on a number of potential problems that could affect the

achievement of unit readiness objectives; respondents were then asked to rate these problems along a scale representing the seriousness of the problem (Table 5.23). They were also asked which of the 15 problems were the most serious. The answers, given in Table 5.24, provide an illuminating look at the problems facing units today as perceived by reserve members; comparative analyses of the responses to the 1979 and 1986 surveys allow us to see, to some extent, how these perceptions have changed over time.

Table 5.24 shows that both officer and enlisted rank three problems highest: insufficient time to plan training objectives and finish administrative paperwork, out of date equipment/weapons, and lack of access to good training facilities and areas. For officers, the next most frequently mentioned serious problems were insufficient time to practice skills, lack of resources for supplies, ammunition, etc., and insufficient staff resources to plan training. Two personnel problems ranked next on the list: being below strength in E-1 to E-4 and shortage of MOS qualified personnel. Ranked lowest were attendance problems, quality of personnel at E-1 to E-4, and shortages of E-5 to E-9 or ineffective annual training. Enlisted rankings were generally similar to officer rankings.

It is possible to compare the perception of problems in 1979 and 1986 for senior enlisted personnel because similar questions were asked in the 1979 and 1986 surveys and a special unit sample in the 1986 Survey replicated a unit sample in the 1979 Survey. The results reported here are for personnel in a sample of 45 identical units in the Army Guard and Reserve. In both years all personnel in the units were sampled, although the questions on problems with unit readiness were asked only of senior enlisted personnel in 1979.[8]

The results are tabulated for senior enlisted personnel in Table 5.25. The results show that the largest changes occurred in the frequency of mention of the problem of being below strength in E-1 to E-4 personnel. This was the most frequently mentioned problem in 1979, with 30 to 40 percent of senior enlisted stating it was a serious or somewhat of a problem. In 1986 the frequencies had dropped to 15 to 20 percent, and it ranked sixth on the list of problems. This result reflects the large increase in manpower strength that occurred over the period, due in part to expanded recruiting and retention compensation initiatives.

[8]Although the units are the same, allowing us to compare the responses over time, we need to be careful about generalizing from these data. The special unit sample chosen to replicate the original random sample in 1979 was actually much larger; however, responses were obtained from only the 45 units mentioned above. We do not know whether these units differ systematically from the nonrespondent units and to what extent the answers from those units would have differed from the units that responded.

Table 5.23

PERCEIVED PROBLEMS IN MEETING UNIT TRAINING OBJECTIVES

Question: How much of a problem is each of the following for your unit in meeting your unit's training objectives? (Percentages given are only for "a serious problem" responses.)

Grade	Not Enough Time to Plan Training Objectives and Get All Administrative Paperwork Done (%)	Lack of Access to Good Training Facilities and Grounds (%)	Out-of-Date Equipment/Weapons (%)	Not Enough Drill Time to Practice Skills (%)	Lack of Supplies, Such as Ammunition, Gasoline, etc. (%)
Enlisted					
E-3	7.5	14.4	17.6	7.8	10.6
E-4	10.3	14.9	13.0	8.7	11.8
E-5	14.2	14.7	13.0	9.7	10.3
E-6	18.8	15.2	12.1	10.4	10.7
E-7	23.6	16.0	11.1	11.5	11.1
E-8	28.9	16.9	10.6	12.2	13.0
E-9	25.2	13.5	8.7	13.2	9.4
Total	15.5	15.1	12.7	9.8	11.0
Officer					
O-1	23.4	14.8	11.3	15.5	12.6
O-2	26.2	15.9	12.6	12.5	11.1
O-3	27.5	14.9	11.6	9.6	9.6
O-4	26.0	10.4	9.9	7.1	6.2
O-5	25.9	9.3	9.3	7.0	4.9
O-6	18.8	6.3	6.2	3.7	5.0
Total	25.8	12.3	10.5	8.9	8.0

Table 5.23 (continued)

Grade	Not Enough Staff Resources to Plan Training (%)	Being Below Strength in Grades E-1–E-4 (%)	Shortage of MOS/ Rating/Specialty Qualified Personnel (%)	Poor Mechanical Condition of Equipment/Weapons (%)	Lack of Good Instruction Manual and Materials (%)
Enlisted					
E-3	10.4	13.1	10.8	13.9	12.6
E-4	8.6	9.2	8.4	9.1	10.5
E-5	8.2	10.4	6.3	8.7	8.0
E-6	7.3	10.7	5.8	7.2	7.7
E-7	7.8	8.7	5.5	7.4	6.2
E-8	8.8	10.8	5.9	7.6	6.0
E-9	6.0	11.7	7.5	6.0	4.6
Total	8.2	10.1	6.9	8.5	8.5
Officer					
O-1	6.2	11.8	5.7	5.8	4.2
O-2	6.3	9.8	5.4	5.9	6.2
O-3	7.6	6.7	6.5	5.7	5.3
O-4	7.5	5.3	5.2	5.1	4.4
O-5	6.2	5.9	5.3	4.9	4.0
O-6	5.6	3.8	4.4	3.3	1.8
Total	7.0	6.7	5.6	5.3	4.6

Table 5.23 (continued)

Grade	Being Below Strength in Grades E-5–E-9 (%)	Low Quality of Personnel in Low Grade Unit Drill Positions (%)	Ineffective Training During Annual Training (%)	Low Attendance of Unit Personnel at Unit Drills (%)	Low Attendance of Unit Personnel at Annual Training (%)
Enlisted					
E-3	6.8	6.9	6.8	8.0	4.5
E-4	6.1	6.7	7.5	6.7	4.0
E-5	4.2	5.0	6.8	5.3	3.1
E-6	3.6	4.2	5.1	4.3	2.2
E-7	4.1	4.1	4.8	4.4	2.4
E-8	4.5	3.6	3.4	3.2	3.1
E-9	4.4	3.8	3.0	1.3	0.2
Total	4.7	5.2	6.3	5.4	3.1
Officer					
O-1	4.1	3.5	5.5	4.4	2.7
O-2	2.3	4.0	3.5	2.9	2.7
O-3	4.2	3.7	3.0	1.9	1.3
O-4	3.5	2.8	2.5	1.5	0.8
O-5	4.9	3.1	1.9	1.1	0.6
O-6	2.2	1.0	0.7	0.0	0.0
Total	3.8	3.2	2.8	1.8	1.2

SOURCE: 1986 Reserve Components Survey, Q.43.

Table 5.24

PERCEIVED PROBLEMS IN MEETING UNIT TRAINING OBJECTIVES: RANKINGS

Problem	Officer		Enlisted	
	Percent a Serious Problem	Ranking	Percent a Serious Problem	Ranking
Not Enough Time to Plan Training Objectives and Get All Administrative Paperwork Done	25.8	1	15.5	1
Lack of Access to Good Training Facilities and Grounds	12.3	2	15.1	2
Out-of-Date Equipment/Weapons	10.5	3	12.7	3
Not Enough Drill Time to Practice Skills	8.9	4	9.8	6
Lack of Supplies, Such as Ammunition, Gasoline, etc.	8.0	5	11.0	4
Not Enough Staff Resources to Plan Training	7.0	6	8.2	9
Being Below Strength in Grades E-1–E-4	6.7	7	10.1	5
Shortage of MOS/Rating/ Specialty Qualified Personnel	5.6	8	6.9	10
Poor Mechanical Condition of Equipment/Weapons	5.3	9	8.5	7-8
Lack of Good Instruction Manual and Materials	4.6	10	8.5	7-8
Being Below Strength in Grades E-5–E-9	3.8	11	4.7	14
Low Quality of Personnel in Low Grade Unit Drill Positions	3.2	12	5.2	13

Table 5.24—continued

Problem	Officer		Enlisted	
	Percent a Serious Problem	Ranking	Percent a Serious Problem	Ranking
Ineffective Training During Annual Training	2.8	13	6.3	11
Low Attendance of Unit Personnel at Unit Drill	1.8	14	5.4	12
Low Attendance of Unit Personnel at Annual Training	1.2	15	3.1	15

Another favorable trend is the decrease in 1986 in how frequently "low quality of personnel in low grade unit position" is mentioned. In 1979, this was mentioned by 13 to 19 percent of senior enlisted personnel as a problem, whereas in 1986 it was mentioned by only 9 to 11 percent. Again, recruiting quality has increased markedly in that time. The two other areas of improvement between 1979 and 1986 are attendance at drills and shortage of MOS qualified personnel. Both were mentioned less frequently in 1986 than in 1979.

Problems with equipment, access to better training facilities, and insufficient time for practicing skills and administrative work all were mentioned more frequently in 1986 than in 1979. One explanation for the overall pattern of changes between 1979 and 1986 is that personnel problems have generally declined in magnitude; however, units that are more fully manned and with higher quality people may be more aware of problems in training—older or poorly maintained equipment, lack of time or access to training facilities, and heavier burden of administrative work.

Despite the apparent increases in both the number and quality of junior personnel, however, we saw earlier that there is substantial evidence to show that units are still experiencing severe problems in terms of shortages in specific areas and specific skills, as well as a high turnover of junior enlisted personnel early in their enlistment term. We reiterate, this report focuses on issues that might be ameliorated through changes in compensation. Problems such as out-of-date or poorly repaired equipment and adequacy of supplies and training

Table 5.25

COMPARING PERCEPTION OF UNIT PROBLEMS FOR 1979 AND 1986

Grade	% Responding Serious or Somewhat of a Problem						
	Out of Date Equipment/ Weapons	Poor Mechanical Condition of Equipment/ Weapons	Being Below Strength in Grades E-1–E-4	Being Below Strength in Grades E-5–E-9	Not Enough Staff Residences to Plan Effective Training	Low Attendance at Unit Drills	Low Attendance at Annual Training
1979							
E-5	13.7	11.9	30.2	7.8	12.6	18.0	6.9
E-6	14.8	10.1	35.7	5.0	11.7	17.0	6.6
E-7	10.4	9.3	37.5	5.6	12.1	15.5	5.6
E-8	13.1	7.9	38.1	2.8	8.0	7.4	1.7
1986							
E-5	21.6	14.9	16.8	7.3	13.7	12.8	8.3
E-6	20.9	14.5	19.4	5.2	14.3	10.4	6.3
E-7	19.9	14.6	15.1	6.1	15.3	9.0	6.8
E-8	20.5	11.6	15.7	6.8	16.4	7.5	4.1
Difference 1986–1979							
E-5	7.9	3.0	-13.4	-0.5	1.1	-5.2	+1.4
E-6	6.1	4.4	-16.3	-0.2	2.6	-6.6	-0.3
E-7	9.5	5.3	-22.4	-0.5	3.2	-6.5	1.2
E-8	7.4	3.7	-22.4	+4.0	8.4	+0.1	2.4

Table 5.25 (continued)

Grade	% Responding Serious or Somewhat of a Problem							
	Ineffective Training During Annual Training	Shortage of MOS Qualified Personnel	Low Quality of Personnel in Low Grade Unit Positions	Not Enough Time to Practice Skills	Not Enough Time to Plan and Get All Paperwork Done	Lack of Access to Good Training Facilities	Lack of Good Instruction Manuals and Materials	Lack of Supplies
1979								
E-5	9.2	15.5	15.6	12.0	14.7	17.2	12.1	19.0
E-6	8.7	14.1	17.9	14.7	21.4	21.6	11.6	21.4
E-7	7.3	13.7	18.8	26.9	29.4	19.1	9.2	21.1
E-8	3.4	7.4	12.5	15.9	31.2	16.5	3.4	13.6
1986								
E-5	12.6	12.7	11.0	19.7	23.8	22.7	14.1	17.6
E-6	10.5	9.8	9.1	21.2	29.5	22.7	12.0	17.1
E-7	9.5	10.2	10.2	29.2	42.8	28.0	10.5	20.4
E-8	7.5	8.9	9.6	34.9	45.2	22.6	13.0	19.2
Difference 1979–1986								
E-5	3.4	-2.8	-4.6	7.7	9.1	5.5	2.0	-1.4
E-6	1.8	-4.3	-8.8	6.5	8.1	1.1	0.4	-4.3
E-7	2.2	-3.5	-8.6	2.3	13.4	8.9	1.3	-0.7
E-8	4.1	1.5	-2.9	19.0	14.0	6.1	9.6	5.6

manuals are not compensation related. Issues such as access to better training facilities are partly related to compensation because travel to better training facilities or participation in better training exercises may involve additional time for reservists. Other issues such as shortages of junior personnel and MOS qualified personnel are, however, either directly related to compensation or amenable to solution through changes in the way compensation is currently structured. For example, carefully targeted bonuses and a restructuring of the basic pay table to reward longevity and proficiency within the same skill may help alleviate some of the problems we are facing with regard to low MOS qualification rates and skill turnover. Raising the total compensation of junior enlisted personnel through the introduction of retainer pay (that would not be tied to pay grade) and enlistment bonuses with enhanced term completion payments would help in reducing the high rates of attrition of such nonprior individuals. These proposals will be discussed at length in a forthcoming report and are further briefly explicated in the next section.

VI. CONCLUSIONS

Maximum personnel readiness is achieved when each unit gains its authorized strength with reservists who are proficient in the authorized skills. Unlike the active force, individuals cannot be nationally recruited and trained and assigned to local units. Each reserve unit must meet its particular supply and skill mix from its local labor market. This, combined with the unique nature of reserve service and the inherent lack of flexibility in the reserve compensation system has led to several problems in the areas of personnel and training readiness. Some reserve personnel and training readiness problems are related to lack of availability of adequate equipment for training or access to adequate training facilities. Resolving these problems principally requires increased capital expenditures. Another category of problem relates to shortages of current supplies, manuals, and other O&M items for which increased operating tempo budgets might be necessary. Other problems are related to shortages of skill qualified personnel either because of recruiting or retention problems or because available personnel are not being trained in duty occupational skill. These can be ameliorated through improvements in compensation. Problems related to the lack of time to plan or carry out training, or to perform administrative tasks, can be addressed through compensation system changes and perhaps changed mix of full-time and part-time personnel.

Problems related to shortages of occupationally qualified personnel and those related to lack of adequate training time are most amenable to resolution through compensation system changes. The following problems are likely candidates for resolution through changes in the compensation system:

- Personnel shortages
  - — Junior personnel
  - — Geographical and skill shortages
  - — Personnel shortages in larger units and early-deploying units
  - — Potential shortages in units undergoing intense training
  - — Potential shortages during and after mobilization due to income related transition problems
- An evolving more senior officer and enlisted reserve force
- Low skill qualification levels among unit personnel
- Limited time for planning for training, actual training, and administrative work

This report focuses primarily on the Army Selected Reserve components for two reasons. First, the two components (Army Reserve and Army National Guard) account for over 70 percent of all Selected Reserve personnel; second, they tend to have the most problems with personnel and training readiness. However, some of the issues mentioned above, notably the more senior force and the limited time for planning and training, have more general applicability.

PERSONNEL READINESS PROBLEMS

Shortages of junior enlisted personnel have been persistent over time. Data show that junior enlisted personnel have significantly higher three-year attrition rates than either junior or senior officers or senior enlisted personnel. High levels of attrition mean that only a small portion of the substantial training investments required for junior personnel is subsequently recaptured in productive man-years of service. High attrition levels are directly related to the demographics and aptitude of recruits, to the turbulence associated with the civilian lives of young recruits, to the level of net reserve pay for junior enlisted members and the opportunity for promotion to higher pay grades.

We hypothesize that early attrition of junior personnel may be related to the low net return they obtain from reserve service. Our analysis of the total monetary costs of reserve participation reveals that junior personnel net less than 50 cents of each dollar of reserve pay. Most of the loss comes from forgone civilian income during annual training and transportation costs to reserve drills. We also find that junior personnel are most at risk for losing paid overtime opportunities and wages because of reserve obligations.

Published data of reserve skill and grade structure show that significant imbalances exist between programmed manning and actual manning of many specialties. It appears that the growth in size of the reserve components over the last several years has not been evenly distributed. Certain skills are overmanned and there are distributional skill imbalances, perhaps exacerbated by the recent transfer of units from the active force to the reserve.

The shortages probably arise because of the lack of flexibility in reserve compensation levels, which makes it difficult to address differences in local labor markets or to compensate for differential preferences among personnel for certain skills and certain units. For example, we find that larger units in the Army Reserve and Guard are more prone to shortages, that units with nontransferable civilian skills are harder to fill, and that there are regional and local labor market

differences in unit manning success. We also find that early-deploying units do not appear to be any more successful in manning than late-deploying units—another area where differential compensation is needed to improve total readiness and our ability to deploy in time.

Projections of both officer and enlisted reserve forces under current policies show a much more senior force evolving over the next 15 years. The number of enlisted reserve personnel reaching retirement eligibility will almost double between FY85 and FY99. The increase in seniority is due to higher retention of post-1973 volunteer cohorts, higher reenlistment bonus payments and pay since 1980, and the influx of Vietnam veterans during the middle and late 1970s into the reserve forces. Increased seniority is also evident in the officer corps where an unusually large number of Vietnam era veterans with 13 to 20 years of service are approaching retirement.

These evolving more senior forces will bring increased pay and retirement outlays. Since many reservists who reach retirement eligibility continue in reserve service until 30 or more years of service, the increasing seniority will exacerbate currently perceived problems associated with the older reservists.

Problems arise with increasing seniority only when the increased pay and retirement outlays are not matched by corresponding increases in productivity. Since productivity as a function of age or experience can differ markedly by occupation, the seniority issue needs to be examined by occupation group. Older pilots and medical personnel may be valuable assets because of their experience and high replacement costs. Older infantrymen and supply personnel may increase costs without adding better job performance. Potential savings exist through substitution of younger personnel for older personnel if valid measures of productivity can be developed.

The objective of the reserve system is to augment the active force when needed to provide deterrence as well as to meet wartime/crisis manpower requirements. However, the effective service provided by reservists will be severely reduced if reservists fail to mobilize, separate from reserve service prior to mobilization, or fail to reenlist at Expiration of Term of Service (ETS) after mobilization, provided that choice is still permitted under the terms of mobilization. Little attention has been paid to the significant loss of income that many reservists will encounter when mobilized. Respondents to the 1986 Survey were asked about the effect of being mobilized for 30 days or more on their total income. Almost 50 percent reported they would face moderate or serious decreases in income. If this issue is not resolved in advance, reservists and their families could well encounter loss of homes and other severe hardships during this time of extended separation, which

could trigger separations and consequent loss of personnel and unit readiness at a critical time.

TRAINING READINESS PROBLEMS

Training readiness requires that reserve authorizations be filled with individuals qualified in their military skill. Qualification means that the soldier can adequately perform a prescribed set of duties in a particular skill. However, military occupational specialty qualification levels are significantly below 100 percent even for those units fully manned.

In addition, achieving higher levels of training readiness may require extra time from senior personnel and officers for planning and administrative work as well as additional training time for certain reserve units.

Low Occupational Qualification Levels

Low occupational qualification levels can be traced to low rates of occupational matching for prior service personnel, high turnover of personnel in units, the long process for occupational retraining, promotion incentives that encourage occupational movement, and unit reorganizations that change the unit demand for skilled personnel.

Skill qualification rates for senior personnel change with years of reserve service, holding constant the propensity of individuals to change units. Even after six or eight years of reserve service, however, the qualification rate of prior active service personnel remains lower than that of nonprior service personnel. This difference may reflect a different emphasis on the training and assignment of prior and nonprior service personnel or more frequent retraining of prior service personnel because of promotion opportunities.

An important factor affecting the skill qualification of senior personnel is retraining because of a change of units; 40 to 45 percent of senior soldiers change units at least once. About 10 percent of senior personnel have been with four or more reserve units. Obviously, reservists who change units are much less likely to be skill qualified in their new position than those who do not.

Potential Tradeoffs between Personnel and Training Readiness

Improving unit readiness requires designing compensation initiatives (and complementary organizational changes) that would encourage senior personnel and officers to provide the extra time needed for planning for training and administrative work. Both officer and enlisted personnel rank "insufficient time for planning and administrative work" as the most serious problem in meeting the unit's training objectives. Data also show that about a third of the officers and a fourth of the enlisted personnel encounter family problems because of the extra time spent on reserve work.

New problems will arise if the policy requiring longer and more intense training time from certain reserve units is fully implemented. More training time without corresponding changes in compensation could lead to higher turnover and loss of key reservists. Our evidence shows the National Guard units attending the National Training Center (NTC) experienced higher attrition rates than similar units undergoing normal training schedules. More training time was required in the 12-month period preceding NTC attendance, and NTC training was for three weeks rather than the normal two-week annual training. For a typical reservist, the probability of leaving the unit was 25 percent higher for those in NTC units than in non-NTC units, and 21 percent higher when one compares the probability of leaving the Guard. Whereas some of this attrition may be unit-initiated attrition of marginal personnel in preparation for more intense training, the study found that all types of unit personnel—officer and enlisted—had higher attrition rates.

Further evidence on attrition resulting from extended training time comes from the 1986 Reserve Component Survey. Respondents were asked how likely they were to reenlist in the reserves under three scenarios: the current training schedule, the current schedule plus two extra four-hour drills per month, and the current schedule plus an additional week of annual training.

The results show that extra drills or annual training would reduce the reenlistment rates of junior grade personnel by 7 to 13 percentage points. The retention effects vary systematically across component, prior service group, and policy alternative. The reservists are more adverse to two extra drills per month than to an extra week of annual training. The reenlistment rate of nonprior service personnel is lower than that of prior service personnel in each component, and nonprior service personnel are more adverse to each extended time option than are prior service personnel. Senior personnel are also less likely to

reenlist under both extended time options, with patterns in reenlistment rate reductions closely mirroring those for junior personnel.

SUMMARY

The problems delineated in this report imply that the reserve requires more selective and flexible tools for eliminating shortages and improving unit personnel and training readiness than the active force. Reserve problems are often specific to geographic areas and types of units. Increasing pay across the board is an extremely expensive option and not a very desirable one, given that the problems can be identified and targeted through flexible compensation schemes such as special pay and bonuses. For this to be done, the linkage between the active and reserve compensation system needs to be altered. Our principal recommendations for dealing with the issues raised in this study are:

- Restructure the basic pay table so as to increase rewards for longevity and proficiency within the same skill and decrease rewards for supervisory and managerial skills;
- Raise authorized levels for bonuses and rely more on bonus payments and other discretionary pay in the total reserve compensation system;
- Initiate retainer pay for reservists that would be independent of rank or years of experience; this would cover the fixed costs of reserve participation and also provide a needed pay raise for junior personnel;
- Restructure the current bonus system to place greater emphasis on term completion payments, length of time in the same skill, level of skill proficiency in reserve duty skill at the time of enlistment (prior service enlistees), and on compensating for local unit manning conditions;
- Establish a voluntary mobilization insurance system that would provide payments based on civilian/reserve pay differentials in the event of mobilization; and
- Introduce unit-based readiness pay differentials to recognize the greater training intensity and complexity required of certain units.

We are fully aware that these compensation proposals need to be reinforced by changes in organizational structure and management to be effective. For example, we recommend that reserve unit grade and skill organizational structure be changed to allow higher pay grade

attainment within the same skill. Another recommendation is that greater differentiation be introduced in the amount of reserve training time required for different types of reserve units. The proposals will be discussed in greater detail in a forthcoming report.

REFERENCES

Carr, Darell E., "Overtime Work: An Expanded View," *Monthly Labor Review*, November 1986, pp. 36–39.

Congressional Budget Office, *Improving the Army Reserves*, the Congress of the United States, Washington, D.C., November 1985.

Department of Defense, "Military Compensation Background Papers," third edition, June 1987, Washington, D.C.

Department of Defense, *Manpower Requirements Report FY1988*, February 1987.

Employment and Earnings, Vol. 26, No. 5, May 1979.

Grissmer, David W., and Sheila Nataraj Kirby, *Attrition of Nonprior Service Reservists in the Army National Guard and Army Reserve*, The RAND Corporation, R-3267-RA, April 1985.

Grissmer, David W., and Sheila Nataraj Kirby, *Changing Patterns of Nonprior Service Attrition in the Army National Guard and Army Reserve*, The RAND Corporation, R-3626-RA, July 1988.

Grissmer, David W., and Glenda Nogami, *Retention Patterns for Army National Guard Units Attending the National Training Center (NTC)*, U.S. Army Research Institute, Alexandria, Virginia, March 1988.

Marquis, M. Susan, and Sheila Nataraj Kirby, *Economic Factors in Attrition: Prior Service Individuals in the Army National Guard and Army Reserve*, The RAND Corporation, R-3686-RA (forthcoming).

Mellor, Earl F., "Shift Work and Flexitime: How Prevalent Are They?" *Monthly Labor Review*, November 1986.

Monthly Labor Review, U.S. Department of Labor, Bureau of Labor Statistics, November 1986.

Multiple Jobholders in May 1978, U.S. Department of Labor, Bureau of Labor Statistics, Special Labor Force Report 221.

Official Guard and Reserve Manpower Strength and Statistics—FY 1986 Summary, Assistant Secretary of Defense (Reserve Affairs), RCS:DD-RA(M) 1147/1148, 1986.

Smith, Shirley J., "The Growing Diversity of Work Schedules," *Monthly Labor Review*, November 1986.

Stinson, John F., Jr., "Moonlighting by Women Jumped to Record Highs," *Monthly Labor Review*, November 1986.

Taylor, Daniel E., and Edward S. Sekscenski, "Workers on Long Schedules, Single and Multiple Jobholders," *Monthly Labor Review*, May 1982.