Arroyo Center

Deployments and Army Personnel Tempo

Ronald E. Sortor ◆ J. Michael Polich

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RAND

Prepared for the
United States Army

Approved for public release; distribution unlimited

The research described in this report was sponsored by the United States Army under Contract No. DASW01-01-C-0003.

Library of Congress Cataloging-in-Publication Data

Sortor, Ronald E. (Ronald Eugene), 1940-
Deployments and Army personnel tempo / Ronald E. Sortor, J. Michael Polich.
p. cm.
"MR-1417."
Includes bibliographical references.
ISBN 0-8330-3067-1
1. United States. Army—Personnel management. 2. United States. Army—Foreign service. I. Polich, J. Michael. II. Title.

UB153 .S67 2001
355.3—dc21

2001048479

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Published 2001 by RAND
1700 Main Street, P.O. Box 2138, Santa Monica, CA 90407-2138
1200 South Hayes Street, Arlington, VA 22202-5050
201 North Craig Street, Suite 102, Pittsburgh, PA 15213
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PREFACE

This report presents the results of an empirical analysis of data on Army "tempo" during the period from 1994 through 2000. The purpose is to provide a firm basis for describing recent rates of deployments and other Army activities that take soldiers away from their home stations and, sometimes, from their units. It should interest those involved in planning and managing U.S. military personnel, operations, and deployment policies.

The report rests primarily on analyses of (1) unit DEPTEMPO data from the official readiness reporting system, documenting deployment rates for units; and (2) individual data from the personnel system, documenting the deployment histories of soldiers. It also reflects insights gleaned from an extensive series of RAND visits to operational units in 1998–1999. This analysis focuses on the Army Active Component only; similar issues may be raised about the Reserve Components, but they lie beyond the scope of the data used in this report.

This research was sponsored by the Army Deputy Chief of Staff for Personnel and was conducted in RAND Arroyo Center's Manpower and Training Program. The Arroyo Center is a federally funded research and development center sponsored by the United States Army.

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SUMMARY

Over the past decade, numerous observers have expressed concerns that the U.S. armed forces have been stressed by the increased pace of overseas operations. Usually centered on a discussion of "increased tempo," these concerns focus on deployments and their possible effects on force readiness and morale. Many of these issues were brought to prominence during previous reviews of U.S. defense posture and the impact of "small-scale contingencies" (SSCs) such as the operations in Bosnia, Kosovo, Haiti, and Somalia. Those issues continue as topics of debate today; in fact, continuing public and congressional interest recently resulted in legislation requiring additional compensation for military personnel who are deployed for extensive periods.

RAND Arroyo Center undertook several empirical analyses to better understand the nature of these tempo concerns. We aimed to derive quantitative measures of unit and individual deployments over the past several years, which we could then use to create an empirically grounded description of tempo and its possible effects. In addition, we made many visits to operational units as well as headquarters to provide insights about tempo's possible effects on personnel and unit readiness.

This report provides the results. It is based primarily on two sets of data collected by the Army to measure tempo: (1) unit DEPTEMPO (deployment tempo) data from the official readiness reporting system, documenting deployment rates for units, and (2) individual data from the personnel system, documenting the deployment histo-

ries of soldiers.[1] The report also discusses other factors, such as unit workload and the dynamic aspects of deployments, which shed further light on the problems attributed to tempo and help illuminate the full burden of SSCs.

The analysis shows that, over time, Army deployment levels have increased appreciably. DEPTEMPO data indicate that for soldiers in operational units, the average time deployed rose nearly 30 percent between 1997 and 2000. The number of units with lengthy periods away from home was also up sharply. For example, the number of units deployed 120 days or more per year doubled since reporting began in 1997. Similarly, the Army's individual personnel data show that the number of soldier-days deployed to major operations and exercises—a measure of total burden on the Army—doubled between 1994 and 1999.

The impact, of course, is uneven and hits some soldiers quite hard for a period of time. For example, the average soldier in an Armor unit was away almost 10 days per month, compared with less than 5 days for members of some other unit types. In addition, a deployment, when it occurs, is sometimes a disruptive and unplanned event in a soldier's life. Moreover, the recent deployments, dominated by Bosnia and Kosovo, were for lengthy periods—6 months in most cases, and up to 12 months in others (e.g., division staff).

However, the fraction of the force affected remains relatively small. Out of 1,400 units reporting DEPTEMPO, only 222 units had 120 days or more away from home station in the year ending October 2000; only 89 units were away for 180 days or more. According to DEPTEMPO data, the average soldier in a unit spends about 7 days away from home each month, or about 85 days per year. If we look only at deployments for operations and overseas exercises, the impact is smaller: Those types of deployments take the average soldier away about 30 days out of each year.

The personnel data, which allow us to trace the deployment history for an individual soldier over a period of years, confirm this picture. During a given year, most soldiers do not deploy at all. Those who do

[1]The analysis focuses on the Active Component; similar issues arise with the Reserve Components, but they go beyond the scope of our data.

deploy may be away for long periods, but fewer than 4 percent are subject to repeat deployments. Thus, repeated contingency deployments are experienced by only a small fraction of the force.

A similar picture emerged when we examined the total amount of time that a soldier was deployed over a period of several years. We analyzed three-year periods during the 1990s and found that less than 10 percent of the force was away for major deployments more than one-sixth of the time. Less than 1 percent was away more than one-third of the time—the equivalent of 120 days per year. In part, this reflects the regular rotation of career soldiers across different units and positions, many of which are not subject to deployment.

Those results led us to conclude that a simple look at static measures of tempo and deployment does not by itself explain a "tempo" problem. How, then, does one explain the widely felt concerns about tempo? We believe that there *is* a problem, and that it results from two sources that are hard to measure using traditional military record-keeping systems. The first source, in our view, is the overall workload, generated by the combination of the warfighting mission, the new missions, and the day-to-day demands of operating a unit and installation in peacetime. The workload strain is felt acutely when the unit faces personnel shortages. To date, however, there has been no mechanism for collecting systematic information on workload in units.

The second source is more subtle, arising from the dynamics of the entire system that must sustain the peacetime force, prepare and train for SSC deployments, and adhere to various peacetime operational and personnel policy constraints. We observed repeatedly in unit visits that other factors often play an important role in the degree of stress and disruption caused by deployments. Even relatively small operations require large amounts of leadership time, cause turbulence from cross-leveling and tailoring of the force, and require specialized training. Those effects are felt in other units, which must supply the filler personnel and support the training and deployment of the deploying force. Our analysis of Bosnia deployments, for example, highlighted the personnel turbulence associated with SSC deployments, arising from fundamental features of military service and peacetime personnel policies. That turbulence con-

tributes to the uncertainty surrounding deployments and probably increases the sense of disruption soldiers associate with SSCs.

The effects of tempo may not be due, therefore, to the pace of deployments by themselves. Rather, it is likely that tempo is coupled with other factors to place stress on the military system. To begin with, Army units have often been filled to less than 100 percent of their stated wartime personnel requirement. Although the Army has long operated with this personnel shortfall, its existence becomes an acute problem when commanders must scramble to deploy a unit at full strength.[2] Second, as shown by our analysis of Bosnia, even small deployments have larger ripple effects across the force, creating extensive personnel turbulence and disrupting unit training cycles. Third, SSC operations generate much additional workload for planning, split operations, and continued support for the home station. Finally, these SSC deployments must be conducted in the context of a force that has experienced reductions in personnel strength and related resources while still attempting to achieve other paramount goals (i.e., maintaining readiness for a major theater war and training the future soldiers and leaders in warfighting skills). This picture leads us to conclude that the major focus of Army concern about deployments should probably be not on the individual soldier effects, but on overall force management, to evenly distribute the burden, minimize short-term readiness impacts, and ensure that longer-term skill development and warfighting capability are sustained.

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[2]Near the end of the study period, the Army announced a new policy aimed at filling divisional units to 100 percent of their authorized strength. If sustained, that policy would ameliorate the fill problem in TOE units.

ACKNOWLEDGMENTS

This report benefited greatly from the support and assistance provided by many people in the Army and at RAND. We gained important insights from Lieutenant General David H. Ohle and Lieutenant General Timothy J. Maude, successive Deputy Chiefs of Staff for Personnel, and Major General Michael D. Maples, Director of Operations, Readiness, and Mobilization in the Office of the Deputy Chief of Staff for Operations and Plans. The authors also owe special thanks to RAND colleagues Jennifer Pace and Stephanie Williamson, both of whom contributed enormously to this analysis through their development and processing of the personnel and unit deployment data. The final report also benefited from the very helpful comments and suggestions from RAND reviewers David Oaks and Charles Kaylor. The content and conclusions, however, remain solely the responsibility of the authors.

Chapter One

INTRODUCTION

BACKGROUND

Over the past decade, numerous observers have expressed concerns that the U.S. armed forces have been stressed by the increased pace of overseas operations. These concerns encompass not only near-term force readiness and morale, but also longer-term force capability and the military's continued ability to recruit and retain high-quality personnel. Many of these issues were brought to prominence during the Quadrennial Defense Review in 1997 and have remained important in official deliberations about military posture.[1] Meanwhile, the continuing public debate and congressional interest resulted in legislation governing additional compensation for military personnel who are deployed for extensive periods of time.

Embedded in these issues is an overall sense that the military services are experiencing higher unit activity levels (often termed OPTEMPO) and higher rates of personnel movement (often termed PERSTEMPO). The increased tempo is frequently ascribed to new types of deployments (e.g., Bosnia, Kosovo, Haiti, Somalia, and Kuwait). For the Army, these deployments have been particularly demanding because they have involved new missions and the deployment of partial units, thus disrupting established units and collective training schedules designed to maintain warfighting readiness. The deployments, however, are but one source of the demand on units and soldiers. They are in addition to other activities that in-

[1]See, for example, Secretary of Defense (1997), National Defense Panel (1997), and U.S. General Accounting Office (2001).

clude regular unit training cycles (e.g., preparation for exercises at Combat Training Centers); joint or combined readiness exercises, often conducted overseas; support for other national goals (such as Reserve Component training, humanitarian relief operations, and disaster assistance); and local installation support activities.

RAND Arroyo Center's initial investigations showed that empirical data and analysis were lacking to adequately assess the extent or causes of the perceived increase in Army tempo.[2] This report attempts to make such an assessment, using personnel data files and newly instituted reports of unit deployment rates derived from the official readiness reporting system. We set out to derive quantitative measures of unit and individual deployments over the past several years, which we could then use to create an empirically grounded description of tempo and its possible effects.

TURBULENCE, OPTEMPO, AND PERSTEMPO: WHAT ARE THEY, AND WHY DO THEY MATTER?

The underlying hypothesis of many is that rising OPTEMPO and PERSTEMPO have increased turbulence in units, to the point where they are likely to exert negative effects in the long run if not the short run. However, there is no definition of tempo that enjoys universal acceptance or that adequately captures all of the phenomena underlying these concerns.

OPTEMPO, for example, has taken on different meanings over the course of only a few years. Not long ago, OPTEMPO in the Army meant the rate of activity for major weapon systems, defined by metrics such as tank miles or helicopter flying hours. OPTEMPO was used to plan and budget dollars for training. In that context, most military personnel viewed "more OPTEMPO" as good; it would have been difficult to find soldiers who could perceive negative effects of increased OPTEMPO. Recently, however, OPTEMPO has taken on a broader meaning and includes activities such as small-scale contingencies (SSCs), humanitarian assistance missions, and operational

[2]This report only addresses tempo for the Active Component of the Army. While the Reserve Components have also experienced an increase in tempo for overseas operations, they were beyond the scope of this study.

deployments in addition to training activities.[3] In this context, OPTEMPO is often viewed as "too high." Implicitly, the objection is that the pace of activities may be too high for Army units to conduct the full range of training activities needed to maintain readiness for immediate deployment to a distant combat theater and, at the same time, provide soldiers with a reasonable quality of life.

Similarly, PERSTEMPO has also had a number of definitions and meanings, some of them mutually inconsistent.[4] To obtain a consistent measure among the services, DoD has defined PERSTEMPO as the number of days that military personnel spend away from home base. For the Army, that means the pace and frequency of deployments and field training exercises that take soldiers away from home overnight. Senior Army officials have suggested a goal of not more than 120 days away from home each year.[5] The "time away from home" criterion has also been written into law: Recent congressional action would require the services to provide substantial compensation to members who spend more than 250 days deployed in any 365-day period.[6]

In addition, turbulence has causes other than the pace of unit activities or absences from home station. Soldiers must regularly rotate among units and positions (for example, to return to the United States after a tour in Europe or Korea or to replace personnel who have left the service).[7] The resulting turbulence is sometimes cited by those who perceive detrimental effects on readiness. These varying usages have complicated the debate about how tempo has increased and what its effects have been.

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[3]These multiple meanings are explicit in Army Field Manual FM 101-5-1, which defines OPTEMPO as encompassing both the pace of operations (all the activities of a unit) and the mileage allowed for a vehicle or aircraft (based on a budgetary allowance).

[4]See Levy et al. (2001) for a discussion of the various definitions and meanings in circulation in the late 1990s.

[5]See briefings for the *Senior Leaders Training Conference*, Office of the Deputy Chief of Staff for Operations and Plans, July 1997.

[6]See the Fiscal Year 2000 Defense Authorization Act, Public Law 106-65.

[7]See Hix et al. (1998).

ANALYSIS OF ARMY TEMPO

Recognizing concerns about tempo and the need for improved measures to reflect it, in 1997 the Army began collecting data for a unit-level measure called DEPTEMPO (deployment tempo), defined in terms of the number of "unit" days away from home.[8] Those data are included in official readiness reports each month and are aimed at describing the aggregate impact of deployments on units. In this document we shall analyze DEPTEMPO data in detail to describe trends and patterns of "time away from home" over the past several years.

In addition, the Army's personnel data system has long incorporated indicators of individual soldiers' deployments to major operations and exercises. Although the personnel system does not capture all the same activities as DEPTEMPO, it provides a unique mechanism for disaggregating major deployments and seeing their effects at the level of the individual soldier. We have used the personnel data to determine how often individual soldiers deploy and to estimate how long they are away from their home station over the course of several years.

The analysis below shows that tempo, defined as "time away from home," has risen appreciably since the early 1990s. For example, average DEPTEMPO—a measure of units' time deployed—has increased by 30 percent since reporting began in 1997. Similarly, the Army's individual personnel data show that the number of soldier-days deployed to major operations and exercises—a measure of total burden on the Army—doubled between 1994 and 1999.

Still, the average soldier in a unit spends only about 7 days away from home each month, or about 85 days per year. If we look only at deployments for operations and overseas exercises, the impact is smaller: Those types of deployments take the average soldier away about 30 days out of each year. This impact, of course, is quite uneven and hits some soldiers quite hard for a period of time. For example, those deployed to Bosnia and Kosovo are away for up to six months at a time. Later, however, they are back at home station, and others replace them on long deployments. Over time, therefore, the

[8]See Army Regulation AR-220-1, *Unit Status Reporting*, 1997.

amount of time that a soldier is deployed tends to even out among personnel in like-type units. We believe it is a combination of the increased deployment time coupled with other factors that is responsible for the problems often attributed to "tempo" alone. These other factors, which often have more subtle effects, are discussed later in this report.

ORGANIZATION OF THIS REPORT

First, we look at the empirical data to see what the two existing sources of data say about commonly held perceptions and concerns related to tempo. In Chapter Two we examine DEPTEMPO data, measured in terms of unit averages and reported in the readiness system each month since 1997. In Chapter Three we examine data on individual soldiers, drawn from the Army personnel data system and describing deployments to major operations and exercises back to 1994. In Chapter Four we turn to some of the dynamic aspects of deployments, which shed further light on the problems attributed to tempo in general and help illuminate the full burden of increased SSC operations.

Chapter Two

"TEMPO" OF UNITS

MEASUREMENT OF UNIT DEPTEMPO

In response to concerns about the amount of time soldiers were away from home, in 1997 the Army began collecting data describing the tempo for units. DEPTEMPO (deployment tempo) is defined in terms of the number of "unit" days away from home and reported in each unit's monthly Unit Status Report (USR).[1] The measurement procedure is logically equivalent to calculating (a) the total number of person-days away from home during the month, divided by (b) the total number of persons in the unit. Thus, the maximum value of 30 is attained if the entire unit is deployed away for the month; in that case its DEPTEMPO would be 30 days. If only one-tenth of the members were away for 20 days, the unit's DEPTEMPO would be 2 days. The units covered by this system are those designated as "Table of Organization and Equipment" (TOE), which comprise the Army's operational units that are intended to be deployed.[2]

DEPTEMPO data have been reported in USRs only since mid-1997. One might expect some errors and omissions in such a new data system, as the units become more familiar with the reporting

[1]See Army Regulation AR-220-1, *Unit Status Reporting* (paragraph 7-9, beginning on page 42) for a complete discussion and the regulatory language for reporting DEPTEMPO. It includes procedures, reporting categories, and calculation methodology.

[2]In contrast to TOE units, the other primary category of Army units is called "Table of Distribution and Allowances" (TDA). TDA units generally do not deploy; they typically perform institutional functions such as training, logistics, and other support in the United States.

requirements and develop procedures for collecting the data needed to prepare the monthly report. However, our visits with units during late 1997 and early 1998 showed that the relevant staff (typically the S-3 office in a battalion) were well aware of the data requirement and had incorporated the data collection into their routine preparation of USR reports. Our analysis of the reported data indicated some unevenness in data quality. Nevertheless, we believe the data are useful for painting an overall picture of tempo for the TOE Army.

DEPTEMPO is reported monthly by all TOE units; however, the echelon that reports varies by type of unit. As a rule, battalions are the lowest level reported by combat units, whereas many support units are organized as separate companies and report at the company level. In some cases, reports may originate with detachments or other units organized at a level lower than company.

DEPTEMPO is reported in four categories:

- **Category A.** Overnight training on post or local training area off post.
- **Category B.** Overnight training off post or at a Combat Training Center (CTC).
- **Category C.** Overnight training in support of a joint training exercise (CINC/JCS directed) such as Bright Star or Intrinsic Action.
- **Category D.** All deployments directed by a joint deployment order, humanitarian missions, military assistance to civilian authority deployments, counter-drug support, and UN Staff and Special Forces team deployments.

DEPTEMPO does not include professional development schooling or nontactical temporary duty (TDY) or administrative duties.

We now turn to an examination of the DEPTEMPO data reported by Army units over the three-year period from December 1997 through October 2000. We use these for two main purposes: first, to describe overall trends in units, and second, to portray the burden of deployments as it appears to soldiers in those units.

DEPTEMPO FOR UNITS

Total DEPTEMPO

The aggregate of the four categories of DEPTEMPO provides a measure of the overall tempo of activity in each unit. During the four-year period we examined, the reported total DEPTEMPO averaged almost five days per month per unit.[3] Some units, especially those deployed to Bosnia for example, reported 30 days of DEPTEMPO for a number of consecutive months. Many others reported little or no DEPTEMPO in a given month. During this period an average of 1,410 units submitted a USR report each month; 40 percent of them (580 units) reported zero days of DEPTEMPO for the month.[4]

The average DEPTEMPO across all units also varied considerably by month. Figure 2.1 shows this variation, exhibiting the overall average monthly DEPTEMPO during the period from December 1997 through October 2000.[5] Note that the overall trend is upward; the reported DEPTEMPO doubled, from about 3 days for December 1997 to 6 days for October 2000. Note also the seasonal variation, with the low occurring around the end-of-year holidays.

Although the average DEPTEMPO gives some indication of the tempo in all units across the Army, it does not describe how tempo may vary across units or types of units. How many units are experiencing high DEPTEMPO rates? Has this changed over time?

Figure 2.2 shows the distribution of the number of units reporting various levels of tempo for the period from late 1997 though 2000. Each data point represents a 12-month moving average. By looking at a 12-month average we eliminate the effects of seasonality that may vary across units and control for the fact that units may have very high DEPTEMPO for a few months but then low DEPTEMPO

---

[3]This is the unweighted average based on all units that submitted USR reports during that period. In most months during this period, the database included over 1,400 units.

[4]These are not necessarily the same units in all of the months. The units that report zero days of DEPTEMPO in a given month do not necessarily report zero days in other months, although it is not atypical for the same unit to report zero for more than one month.

[5]See Appendix A for the numerical values represented in Figures 2.1 through 2.5.

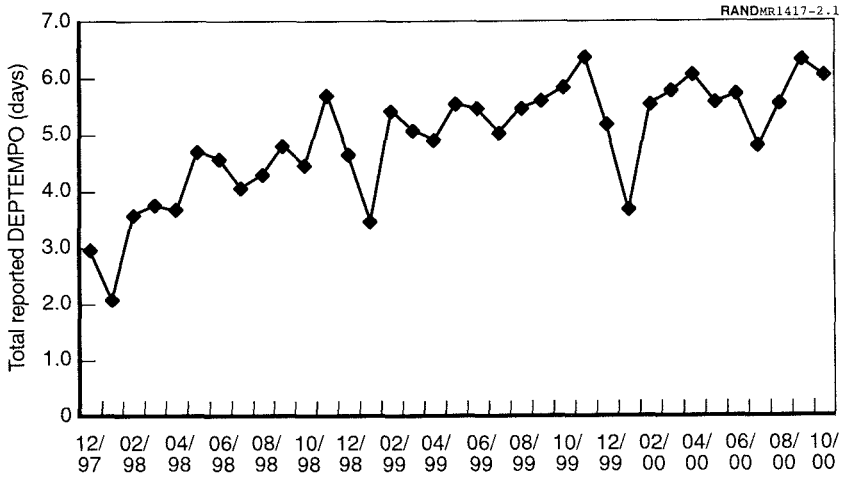
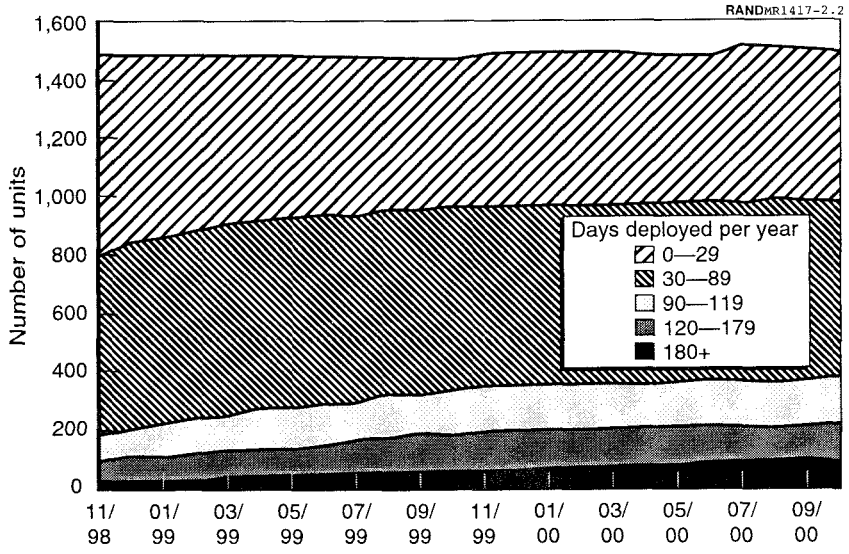


Figure 2.1—Average Monthly DEPTEMPO for Army Units, 1997–2000



See Appendix A, Table A.2, for the numerical data underlying this graph.

Figure 2.2—Annual DEPTEMPO Levels for Units, 1997–2000 (12-Month Moving Average)

in subsequent months. This might be expected for units deployed to Bosnia or units that are in an intensive train-up cycle for a CTC rotation, for example.

These data confirm that the number of units away from home station for extended periods of time increased over the period from December 1997 through October 2000. The number of units reporting 12-month DEPTEMPO at the level of 120 days or higher more than doubled (from 94 to 222) since reporting began in 1997. The number of units reporting 180 days or more grew from 26 units in 1998 to 89 in 2000. DEPTEMPO has clearly increased, despite the fact that these figures are followed closely by the Army leadership in an attempt to mitigate adverse effects.

Note, however, that even with this increase, most units have reported fewer than 90 days DEPTEMPO over a 12-month period. As an example, consider the 12-month period ending October 2000, for which detailed data are shown in Table 2.1. During that one-year timeframe, almost 75 percent of the units reported DEPTEMPO rates under 90 days. In fact, nearly half of all units (47 percent) reported DEPTEMPO between 1 and 59 days, and another 11 percent reported zero DEPTEMPO during the year.

U.S. Army Forces Command (FORSCOM) established a DEPTEMPO standard beginning in FY98 that identified 120 days as the maximum

Table 2.1

Number of Units Reporting Various Levels of DEPTEMPO (12 Months Ending October 2000)

Days Deployed per Year (DEPTEMPO)	Number of Units	Percent of Units
0	167	11.2
1 to 29	344	23.0
30 to 59	352	23.6
60 to 89	247	16.6
90 to 119	159	10.7
120 to 179	133	8.9
180 or more	89	6.0
Total	1,491	100.0

desirable level of annual DEPTEMPO days for its units. The standard also defined three categories of DEPTEMPO and the criterion for each as shown in Table 2.2.

Table 2.2

FORSCOM DEPTEMPO Categories

Days Deployed per Year (DEPTEMPO)	Category
Less than 120 days	Green
120 to 140 days	Amber
More than 140 days	Red

According to the above criteria, there were 222 units in October 2000 that had accrued 120 days or more DEPTEMPO during the previous 12 months and were therefore above the Green category established by FORSCOM. This is roughly 15 percent of the units reporting.[6]

DEPTEMPO by Category of Deployment

Next we examine the average DEPTEMPO in each of the four reporting categories. One might expect very different implications from these different categories. For example, deployment overnight on post, to a local training area, or to a Combat Training Center could be very different from deployment to a joint exercise overseas or to operations such as Bosnia or Kosovo. The "intratheater" deployments tend to be for short periods (days or weeks), to familiar locations, and planned well in advance. Deployments for overseas operations, in contrast, tend to be for long periods (months) and are often to hostile locations. They sometimes also come with little

[6]The FORSCOM standard, or any absolute standard, may not apply to all types of units. For example, Special Operations units (such as Special Forces, Civil Affairs, Psychological Operations, and Rangers) are normally expected to spend a considerable portion of time deployed. Soldiers volunteer for these functions and should understand the deployment burden that they imply. However, the total number of such soldiers is small in comparison to the entire Army.

notice and little reliable information about the duration of the deployment.[7]

Figure 2.3 shows the average for Category A and Category B DEPTEMPO reported in each month. Recall that Category A includes overnight training on post or at a local training area off post, such as Piñon Canyon, Colorado (from Fort Carson, Colorado), or the Yakima, Washington training area (from Fort Lewis, Washington). Category B DEPTEMPO includes overnight training at a more distant location or a Combat Training Center. Thus a Fort Carson unit would use Category B to report a training deployment to Fort Sill, Oklahoma or a National Training Center rotation to Fort Irwin, California.

Over the time period shown in Figure 2.3 there was an overall upward trend in Category A DEPTEMPO. The average rate reported by units roughly doubled, from a little over one day in December 1997 to a peak of a little over two days in September 2000. The average Category A DEPTEMPO for the period was 1.4 days. Category B DEPTEMPO shows more variation from month to month but also shows a general upward trend over the period, going from less than one day in December 1997 to two days in October 2000. Note that the value for this category rose above two days in three of the months. Across all units, the average reported Category B DEPTEMPO is again 1.4 days per month, matching the average for Category A. While most units (over 75 percent) do not report any Category B DEPTEMPO in a given month, many of the units that do deploy off post for training go for five days or more at a time. A trip to a Combat Training Center, for example, would normally be for a 14-day rotation, involve more than 14 days away from home station, and thus accumulate more than 14 days of Category B DEPTEMPO for that month.

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[7]For example, the first unit deployments to Somalia, Haiti, Bosnia, and Kosovo were largely unanticipated at the time. Particularly in the case of Bosnia, later the Army developed a practice of rotating other units into the theater at approximate six-month intervals. Therefore the units participating in successive rotations had considerable advance notice. Nevertheless, the *individuals* within those units may not have been certain who would deploy with the unit, particularly since often only selected subelements of the unit deploy and some individuals were shifted across units to compensate for the nondeployability of some soldiers (see Chapter Four).

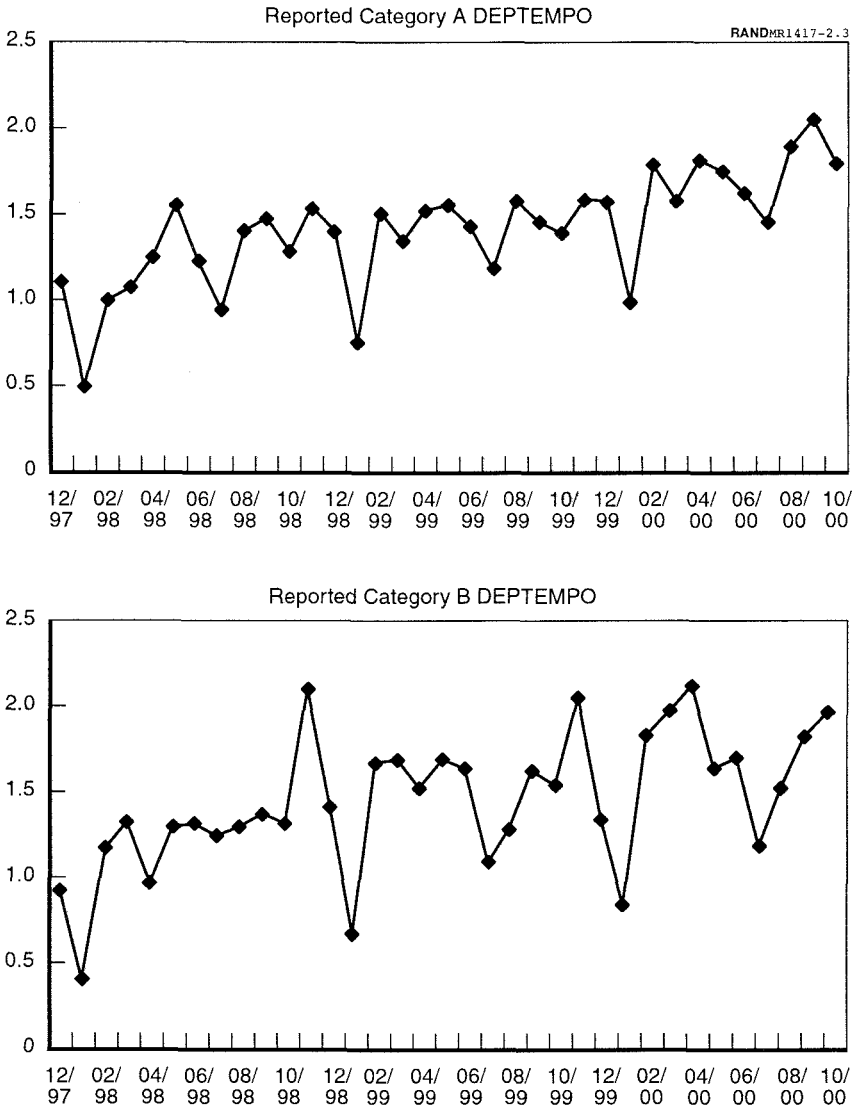

Figure 2.3—Average Monthly DEPTEMPO for Category A (On-Post/Local Training) and Category B (Off-Post/CTC Training)

Figure 2.4 shows the average Category C DEPTEMPO. This category includes overnight training in support of a joint training exercise, such as Bright Star in Egypt or Cobra Gold in Asia.

The reported Category C DEPTEMPO average across all units for the entire period was 0.5 days. In this case, an average of 90 percent of the units did not report any Category C DEPTEMPO in a given month. However, those that did go on one of these deployments were typically away for an entire week or more at a time. As in the case of Categories A and B above, the events included in Category C are normally planned well in advance of the deployment. However, the destination area may not be familiar to the unit. Category C events are typically more challenging for the unit and its personnel than those in Categories A and B.

Category D, in contrast, includes time deployed on the most stressful events, such as operations in Bosnia or Kosovo. Figure 2.5 shows the average DEPTEMPO in Category D. This category includes all deployments directed by a joint deployment order, military assistance to civilian authority, counter-drug support, UN Staff and Special

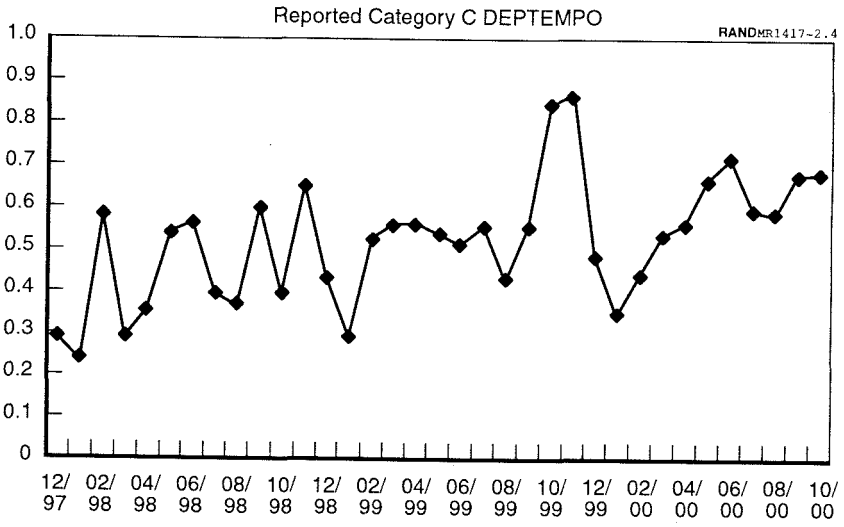

Figure 2.4—Average Monthly DEPTEMPO, Category C (Joint Exercises)

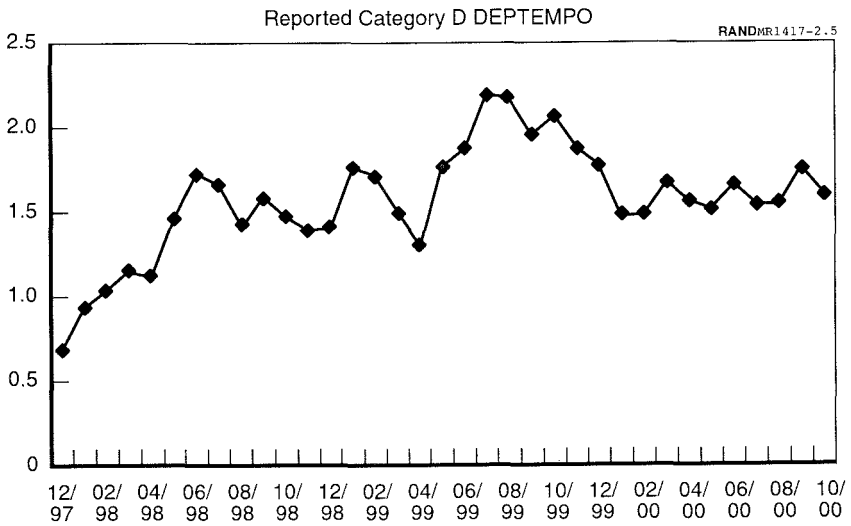

Figure 2.5—Average Monthly DEPTEMPO, Category D (Operations)

Forces team deployments, and humanitarian mission deployments. Deployments for these events may occur with little notice, and they are likely to involve locations that are unfamiliar or hostile, or at least less desirable than the locations for other categories of DEPTEMPO. These are the events that are normally being referred to when the negative aspects of DEPTEMPO are discussed.

Category D DEPTEMPO has also grown over the period shown in Figure 2.5, rising from about 0.7 days in December 1997 to a peak of 2.25 days in July and August of 1999. In more recent months the activity has leveled off, running between 1.5 and 1.75 days a month. The average Category D DEPTEMPO across the full period is 1.6 days a month. As we saw in the case of earlier categories, many units (on average, 80 percent) do not report any Category D DEPTEMPO in a given month. Those that do deploy, however, are often away for months at a time. The units deployed to Bosnia on recent rotations, for example, were typically away for about 6 months.

PER-SOLDIER DEPTEMPO

Measuring Tempo from the Unit Member's Viewpoint

The above discussion depicts DEPTEMPO at the unit level, as is usually done in Army reports and briefings. All units were treated equally in averaging the results. Thus, those calculations gave a 5-person detachment reporting 30 days of DEPTEMPO the same weight as an 800-person battalion reporting 30 days of DEPTEMPO. For some purposes those reported values are appropriate. However, we believe a different calculation is appropriate in three areas of interest to us. These are to portray "time away from home" from the typical soldier's perspective, to make comparisons between branches where the size of the reporting echelon may vary, and to provide a better measure of how the DEPTEMPO burden may have changed over the period for the Army as a whole.

To put disparate-sized units onto a more balanced footing, we calculate a weighted average based upon the size of the units as defined by their authorized strength.[8] For example, consider a case involving units with the DEPTEMPO and authorized strength as shown in Table 2.3.

Table 2.3

Unweighted Versus Per-Soldier Weighted Average DEPTEMPO: Example

Unit	Authorized Strength	Days of Reported DEPTEMPO: Case A	Days of Reported DEPTEMPO: Case B
Detachment A	10	30	0
Company B	200	20	10
Battalion C	600	10	20
Battalion D	600	0	30
Unweighted average		15 days	15 days
Weighted per-soldier average		7.3 days	22.7 days

[8]Where available we used the authorized strength documented in the Army SAMAS (Structure and Manpower Allocation System) file of September 2000, which shows all units programmed. Where units did not appear in this file we used the authorized strength from the MFORCE (Master Force) file for FY99.

The simple unweighted average DEPTEMPO as shown in Table 2.3 is 60/4, or 15 days. The weighted average of the values shown as Case A is (30 × 10) + (20 × 200) + (10 × 600) / (10 + 200 + 600 + 600), or 7.3 days. We believe the weighted value is more informative for comparing the exposure of soldiers in the units and the burden on the Army over time, because it compensates for differences in unit size and reporting echelons. Note that if the reported DEPTEMPO values were reversed for the units, as shown in Case B in Table 2.3, the weighted average is (0 × 10) + (10 × 200) + (20 × 600) + (30 × 600) / 10 + 200 + 600 + 600, or 22.7 days. Thus, an unweighted average yields the same summary statistic, even though the underlying reality (from the soldier's perspective) is very different between the two cases. The weighted average is more appropriate, since it reflects the underlying difference. In general, if small units are more heavily engaged, then the weighted value will be lower than the unweighted average of reported DEPTEMPO, while if the larger units are more heavily engaged, the weighted average will be higher.

Per-Soldier DEPTEMPO in 2000

Using the more appropriate weighted average alters the picture. As an illustration, in the 12-month period ending October 2000, the weighted average DEPTEMPO was 7.1 days per month, considerably higher than the unweighted value of 5.5 days per month. Table 2.4 shows the weighted, per-soldier average DEPTEMPO for each of the

Table 2.4

Per-Soldier Weighted Average DEPTEMPO in 2000

		Per-Soldier DEPTEMPO, 12 Months Ending October 2000	
Category	Type of Deployment	Days per Month	Days per Year
A	Local training, overnight	2.3	27.6
B	CTC or off-post training	2.3	27.6
C	Joint training exercise	0.7	8.4
D	Operational mission	1.8	21.6
Total	All types	7.1	85.2

four categories and the total. All subsequent displays of DEPTEMPO values will use the weighted average values that we calculated, unless otherwise indicated.

Trends in Per-Soldier DEPTEMPO, 1997–2000

Figure 2.6 shows the trends for the 12-month average per-soldier DEPTEMPO in each of the four reporting categories. This confirms that average DEPTEMPO has increased appreciably since reporting began in 1997. Overall, DEPTEMPO rose nearly 30 percent between 1997 and 2000. Notably, the increase has occurred in each of the categories. The absolute increase was greatest in the two intratheater training categories (A and B), whose total rose from 3.5 days for the 12 months ending in November 1998 to 4.6 days for the 12 months ending in October 2000. The operations and joint exercise categories also rose, by about the same percentage.[9]

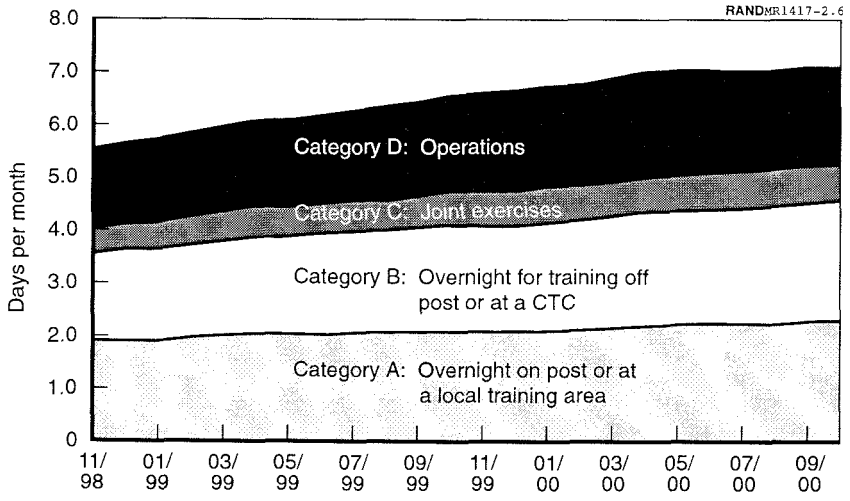

Figure 2.6—Distribution of 12-Month Average DEPTEMPO

[9]See Appendix A, Table A.3, for the numerical values that were used in Figure 2.6 and that underlie these calculations.

For most types of units, the training categories dominate the time away from home captured in DEPTEMPO; they constitute roughly two-thirds of the total time away. However, this is not true for all unit types. The absolute level of total DEPTEMPO and the proportion in each category vary widely by unit type. Which types of units are busier than others, and by how much?

DEPTEMPO by Branch

We know from earlier work that certain types of units tend to deploy to SSCs and other peacetime operations at a greater rate than others. For example, before the operation in Bosnia the personnel in certain support units spent more time deployed for peacetime operations (like those in Somalia and Haiti) than did infantry and armor units.[10] Military Police units were heavily used in certain operations. In contrast, under normal peacetime conditions, combat arms units tend to spend more time in the field and deployed to Combat Training Centers than do many nondivisional support units. Table 2.5 shows the average total monthly DEPTEMPO by branch for the 12 months ending on each of the dates shown.[11]

As shown in Table 2.5, total DEPTEMPO has trended upward over the period. This is true both for the overall Army average and for most of the branches. However, note the wide variation in total DEPTEMPO across the various unit types. Based on these time periods, a soldier in an Adjutant General (AG) unit would expect to spend less than one-third as much time deployed as a soldier in an Armor unit.[12]

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[10]See Sortor (1997).

[11]These branch designations reflect the type of unit to which an individual is assigned, not the individual soldier's branch or occupational specialty. They reflect the first two characters of Standard Requirements Codes for TOE Army units, as contained in Army force programming documents such as the MFORCE. The categories shown are for purposes of simplifying the table and do not agree in all cases with the Army definitions. For example, some branches may have units in more than one category (aviation and engineers, for example). We have put all units in one category.

[12]Note that the reported values for Psychological Operations (PO) units are far higher than others. These values do not agree with other sources and appear to reflect reporting irregularities. For that reason and because the values would be far off the scale, we omitted PO from Figure 2.7.

Table 2.5

Average Monthly Total DEPTEMPO, by Branch (Averaged over 12-Month Periods)

Branch[a]		Nov 98	Feb 99	May 99	Aug 99	Nov 99	Feb 00	May 00	Aug 00	Oct 00
Combat										
Airborne	AB	2.73	3.08	2.69	2.57	3.32	3.29	3.38	3.80	4.11
Armor	AR	7.88	8.15	8.26	8.56	8.55	8.66	8.88	9.19	9.66
Aviation	AV	4.77	5.04	5.32	5.73	5.92	5.87	6.14	5.81	5.85
Infantry	IN	7.14	7.73	7.99	8.03	8.29	8.26	8.58	8.62	8.54
Special Forces	SF	6.09	6.29	6.75	7.24	7.55	8.07	8.35	8.56	8.61
Combat Support										
Air Defense	AD	5.22	6.05	7.65	9.00	9.83	9.58	9.40	8.17	7.91
Engineers	EN	5.45	5.97	6.37	6.58	6.92	6.79	6.77	6.74	6.49
Field Artillery	FA	5.55	6.10	6.52	6.85	7.13	7.53	7.74	7.84	7.90
Military Intelligence	MI	6.82	7.31	7.19	6.61	6.29	5.74	5.74	6.09	6.51
Military Police	MP	3.38	3.86	4.30	4.69	5.31	5.42	5.38	5.21	5.06
Signal	SC	4.89	4.74	4.64	5.02	5.55	5.92	6.20	5.82	5.72

[a]Branch of unit to which the soldier is assigned.

Table 2.5—continued

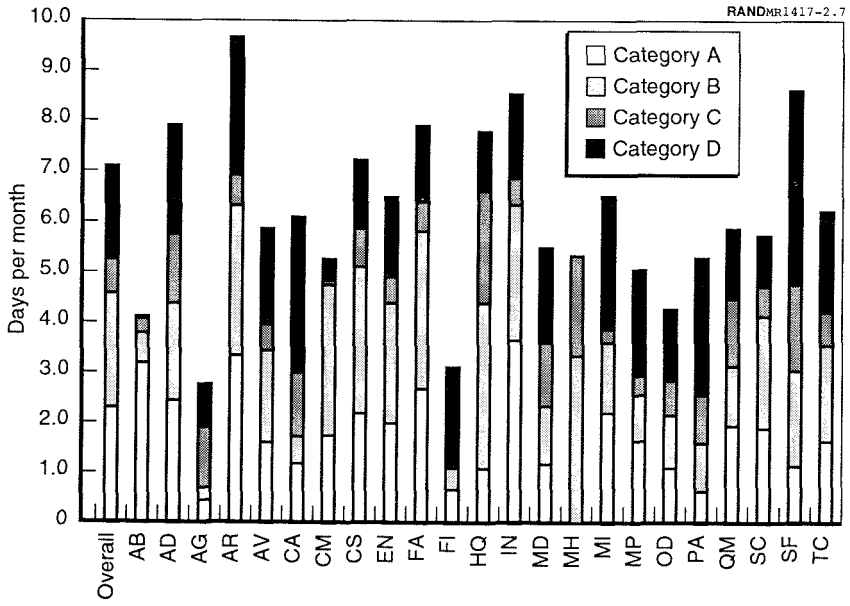
Branch[a]		Nov 98	Feb 99	May 99	Aug 99	Nov 99	Feb 00	May 00	Aug 00	Oct 00
Combat Service Support										
Adjutant General	AG	1.61	1.75	1.90	1.78	1.76	2.09	2.45	2.62	2.77
Civil Affairs	CA	6.18	6.33	6.67	7.17	7.25	7.42	7.17	6.25	6.09
Chemical	CM	4.83	4.52	4.62	4.48	4.23	4.59	4.95	5.10	5.26
Combat Support	CS	5.04	5.00	4.94	5.11	5.40	5.94	6.68	7.03	7.22
Finance	FI	2.26	2.28	1.96	2.03	2.04	2.21	2.53	2.82	3.11
Headquarters	HQ	3.88	4.22	4.69	5.37	6.09	7.08	8.06	8.24	7.79
Medical	MD	4.39	4.73	4.85	4.98	5.21	5.50	5.57	5.41	5.49
Military History	MH	3.75	3.00	2.42	2.67	2.83	4.25	4.50	3.33	5.33
Ordnance	OD	3.33	3.50	3.52	3.91	4.08	4.12	4.19	4.12	4.27
Public Affairs	PA	3.56	5.37	6.23	6.51	6.60	5.55	5.18	5.04	5.29
Psychological Ops.	PO	7.46	9.82	12.83	15.11	17.85	19.02	19.36	19.80	19.47
Quartermaster	QM	4.41	4.51	3.98	3.60	3.35	3.53	4.31	5.23	5.86
Transportation	TC	4.31	4.86	5.33	5.79	5.94	6.17	6.23	6.05	6.21
All Units		5.49	5.83	6.08	6.35	6.61	6.77	7.03	7.03	7.09

[a]Branch of unit to which the soldier is assigned.

Let us examine the variation in the composition of the total DEPTEMPO across these different types of units.

Figure 2.7 shows DEPTEMPO by branch for the 12-month period ending October 2000, broken into the four reporting categories. Note that not only is there wide variation in the total DEPTEMPO, there is also wide variation in its composition by reporting category.

The overall numbers in the leftmost bar replicate the earlier results, showing that the average soldier in the average unit in the average branch spent 7.1 days deployed from his unit area each month. Compared to the average soldier, a soldier in an infantry unit would have spent more time in the field at home station (3.6 days compared to 2.3) but slightly less time deployed on operational missions (1.7



See Appendix A, Table A.4, for the tabular values for this graph.

Figure 2.7—Average Monthly Branch DEPTEMPO (12 Months Ending October 2000)

days compared to 1.8). In total, the infantry unit soldier would have spent about 8.5 days deployed, compared with 7.1 days for the average soldier. The soldier in an AG unit, on the other hand, would have spent much less time deployed in each category except Category C and only about 40 percent as much in total (2.8 days compared to 7.1 days).

The AG and MP functions illustrate why straight comparisons of simple time deployed do not adequately capture the differences in "tempo," where tempo includes a more comprehensive measure of activity. One point raised in many RAND visits to units was the difference in home-station activity levels among various types of units, arising from their different missions and roles. The combat arms units, while at home station, were either training, preparing to train, or recovering from training (e.g., repairing equipment). Many of the support units, however, like the AG and MP, were responsible for providing support activities while at home station.

The AG function is responsible for the personnel activities of the units and installation personnel. AG personnel maintain records, promote, process for overseas movement, separate, and retire soldiers on the installation they support. In a very real sense the support units were "dual-hatted," in that many such personnel in the units simultaneously held positions in the deploying unit and positions on the installation staff. When not deployed, the unit personnel were expected to work each day performing their installation support mission. The MP units likewise provided law enforcement and other police support to the installation when at home station, in addition to training for their wartime role, deploying on operations, and maintaining their equipment.

These workload and mission differences should be kept in mind when comparing DEPTEMPO rates across various types of units and interpreting the impact of differences in DEPTEMPO on soldiers and unit readiness. However, there are no empirical data available to measure the workload involved in these duties at home station. We draw these inferences from interviews and observations made during unit visits.

It is also important to appreciate that deployments require considerable time for planning and recovery, beyond the deployment period

itself. Even for combat arms units, the DEPTEMPO measure captures only a fraction of that time. For each day spent in the field training or deployed on a training or operational mission, a unit must spend many days planning and conducting individual and unit training before the event. Subsequently, the unit must conduct After-Action Reviews to evaluate performance, plan remedial training, recover and perform maintenance on equipment, and begin preparing for future events. All of these are essential to future performance and take far more time and attention than the event itself.

SUMMARY

The results above indicate that the average soldier in the average TOE unit during 2000 spent 7.1 days per month, or about 85 days per year, deployed. That total included:

- 2.3 days in the field training at home station or at a local training area;
- 2.3 days at an off-post training site or a CTC;
- 0.7 days deployed on a joint training exercise; and
- 1.8 days deployed on an operational mission.

DEPTEMPO for the average soldier in TOE units increased by about 30 percent over four years. However, it still averages only about seven days a month. And, while most of the concern about the effects of growing DEPTEMPO centers on operations like those in Bosnia and Kosovo, intratheater training activities accounted for over two-thirds of the total DEPTEMPO and for two-thirds of the growth over the time period.

The number of units with lengthy periods away from home has increased; those with 120 days or more DEPTEMPO doubled since reporting began in 1997. However, the number and fraction of the force affected remains relatively small. Out of about 1,400 units reporting, only 222 had 120 days or more DEPTEMPO in the year ending October 2000, and only 89 had 180 days or more.

From these statistics, it is evident that overall activity rates have risen, but it is difficult to see why the reported rates of time away

from home would create profound stress on the force.[13] On the other hand, the DEPTEMPO data do not tell the whole story with regard to tempo. We cannot see, for example, if some soldiers in the units are being affected to a greater extent than are other soldiers. Ten soldiers away for a month each for six months would produce the same DEPTEMPO measure as would one soldier away for all six months. Deploying ten of the most senior members of a unit would produce the same DEPTEMPO measure as deploying ten soldiers drawn from a cross-section of the unit members. The personnel data in the next chapter permit us to examine some of these issues.

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[13]Stress, of course, could also arise from other sources or from the interaction of time away from home with other sources. For example, 85 days per year might be compared not with a 365-day year but with a 250-day "work year" (5 days per week, 50 weeks per year). From that perspective, the average soldier is away from the normal workplace about one-third of the time, and increased deployments leave less time for other necessary work at the home station. We return to this workload consideration in Chapter Four.

Chapter Three

"TEMPO" FOR INDIVIDUALS

The DEPTEMPO database shows "tempo" days aggregated on a unit basis. However, it does not permit us to track the specific individuals who deployed, the locations to which they deployed, or the length and number of deployments experienced by a given soldier. Data on individuals are needed to address some key questions that play a prominent role in the debate about tempo. For example:

- Has there been a sharp rise in the number of soldiers deployed?
- Are the same soldiers being deployed repeatedly?
- Do soldiers spend a large amount of time deployed year after year?

To address such questions, we examined deployment information captured by the Army's personnel system, which allows us to track individual soldiers and draw inferences about their experiences over a career. The personnel system also covers deployments back to 1994, permitting us to examine trends over a longer period.

One important limitation of the individual data must be emphasized, however. The personnel system covers only some types of deployments; until very recently, it focused primarily on *major operational deployments and training exercises*. To maintain consistency in trends, this chapter restricts analysis to those "major" deployments. Because of data limitations outlined below, we had to omit deployments arising from local overnight training or CTC rotations. Thus, the personnel data do not permit us to examine a soldier's total "time

away from home."[1] Nevertheless, the personnel data do cover the events most likely to add stress in soldiers' lives, and they considerably expand our understanding of deployment effects.

In this chapter we first describe the data collected in the personnel system, known in the Army as the Standard Installation and Division Personnel System (SIDPERS). We then examine what the data tell us about major deployments in the Army over the seven-year period from 1994 through 2000.

TEMPO DATA REPORTED THROUGH SIDPERS

The Army has been collecting data on selected aspects of individual deployments for a number of years. But until the period following the Gulf War, the data were collected solely for other purposes and do not provide a reliable or complete picture for an analysis of tempo. Only after 1993 did the Army become sufficiently concerned with deployment tempo to adapt its systems to build a more comprehensive tracking methodology. (This situation characterizes the other military services as well.) We have repeatedly been told by personnel system operators that the data are not reliable before the mid-1990s, and our analysis is consistent with those reports.

The Army staff began reporting soldier deployment activity in its "SKILLTEMPO" reports to the Army leadership. The SKILLTEMPO data are so named because they are aggregated and reported by occupational specialty. The data for the SKILLTEMPO reports originate in SIDPERS at the installation level. This chapter uses the same source data that the Army uses for its SKILLTEMPO reports, although we have performed extensive edits on the data that should improve accuracy.

One important limitation of the SIDPERS data is their omission or underreporting of "intratheater" deployments. By intratheater we

[1]What fraction of the total deployment picture is covered by the personnel system? A precise answer is not available because of conflicting definitions and changes over time (see the discussion below). An estimate can be made, however, by considering Categories C and D in the DEPTEMPO data system, which appear to roughly correspond to the events captured by the personnel system. Together, those two categories cover about 35 percent of total reported DEPTEMPO.

mean, for example, off-post training within the same country (such as deployment from a U.S. base to another CONUS post or Combat Training Center, or a similar deployment from a base in Germany to a training area within Germany). Except for the past year or so, SIDPERS data do not track either on-post overnight training or deployments to local training areas off the installation. CTC rotations were added to the reporting requirement in February 1997; however, based on our unit visits and analysis of the data by deployment category, it did not appear that most units were reporting such rotations.[2]

Our information indicates that the SIDPERS data do capture most overseas deployments. The data appear to be most complete for those deployments where a central office creates a transportation manifest for the movement (such as a list of personnel boarded for each airplane flight).[3] These major operations, such as those in Bosnia and Kosovo, also represent the most stressful deployments for both soldiers and units, as we argued in Chapter Two. In contrast, intratheater deployments tend to be shorter, in familiar locations, and planned well in advance so that soldiers and units can make adequate preparations to mitigate deleterious effects. Therefore we decided it was appropriate to omit the SIDPERS categories for local off-installation training and Combat Training Center activity. We believe this provides a better comparison over time and still yields useful inferences about the most important types of deployments.

One other aspect of the personnel data needs to be mentioned: The SIDPERS data include deployments for all Active Component Army personnel, not just those in TOE units. In this respect SIDPERS is more complete than the DEPTEMPO system, which includes information only for personnel assigned to TOE units. While most of the

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[2]See Appendix B for a description of data editing and a tabulation of all reported deployments by category, showing which types we included and excluded.

[3]For deployments from the 1st Cavalry Division to Bosnia, we compared records of individual deployments between the actual flight manifests and SIDPERS records and found a close correspondence between the two. We also calculated the sum of individual deployment records from other installations involved in the same operations and compared those to passenger information from official deployment plans (TPFDD); again we found close agreement.

deployments are conducted by personnel assigned to TOE units, some soldiers do deploy from TDA organizations as well. For example, during the period 1998 through 2000 there were 5,054 enlisted deployments from TDA organizations, out of a total of 104,332 enlisted deployments (4.8 percent). The data in this chapter will be for all Army personnel, whether assigned to TOE or TDA organizations.

From the personnel data we can determine for each soldier when he or she deployed, the date of return, and the location of the deployment. By tracking individual records over time and aggregating across various categories, we can examine the level of deployment across the Army as a whole as well as in various parts of it. We are interested in estimating the number and length of deployments, the incidence of repeated deployments, and the total amount of time soldiers spend deployed. First, how many deployments have Army personnel undertaken in each year?

TRENDS SINCE 1994

Number of Deployments

Figure 3.1 shows the number of deployments as captured by the Army personnel system for 1994 through 2000. A "deployment" in this case is a movement by a soldier from his home station to a major operation or exercise captured in the personnel system. As we can see from the figure, the number of deployments was somewhat larger in 1996 through 1999 than in 1994 and 1995.[4] However, the number of deployments in any year represented less than 10 percent of the force; the Army had between 479,000 and 541,000 total personnel in each of these years.[5]

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[4]The data for 2000, available as of this writing, show a modest decline relative to 1999. However, we have noted in earlier analysis that there is often a considerable lag between the date of a deployment and the time the event appears in the Army personnel deployment database.

[5]Army end-strength was somewhat higher in 1994 and 1995 (541,000 and 508,000) because the post–Cold War drawdown was still in progress at that time. End-strength then fluctuated between 479,000 and 492,000 during 1996–2000. See Appendix C for details.

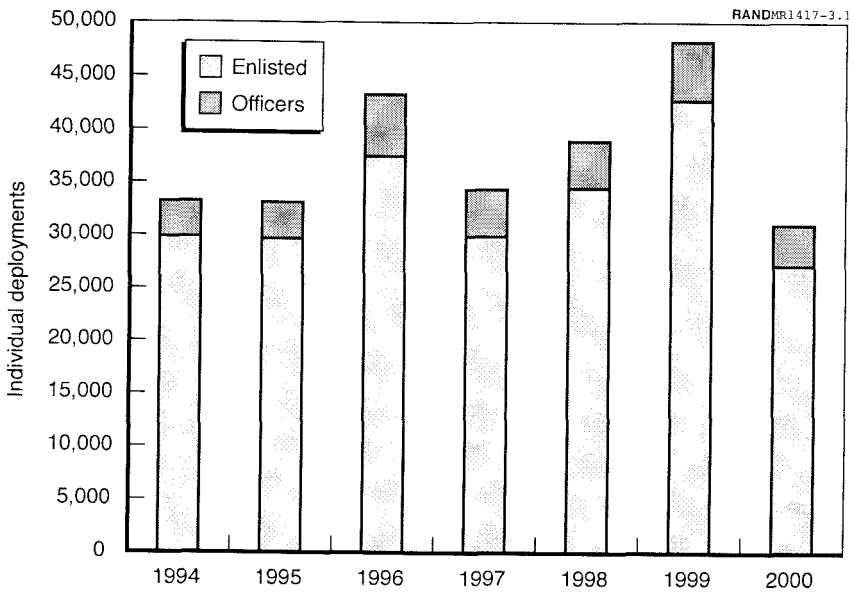

Figure 3.1—Number of Individual Deployments to Major Operations and Exercises, 1994–2000

We note again that these data cover only deployments by Active Component soldiers. Through this period some Reserve Component (RC) soldiers have also deployed, primarily in support units. Late in the period, the Army also began deploying selected RC combat elements (e.g., a portion of a National Guard division headquarters, which deployed with an Active Armored Cavalry Regiment). These RC deployments have reduced the burden on the Active Component somewhat; however, overall active soldiers appear to have constituted the lion's share of those deployed.[6]

[6]Although data on individual RC soldiers deployed are not readily available in centralized systems, aggregate counts of deployments kept at Department of the Army headquarters support this inference.

Deployment Location and Length

Where did these deployments occur? As seen in Figure 3.2, the large increases in 1996 and 1999 resulted from deployments to Bosnia beginning in 1996 and to Kosovo beginning in 1999.[7] The deployments to Bosnia dominated in 1996 and then fell off somewhat in 1997 and 1998. In 1999 the deployments to Kosovo ("other Balkans") added to those in Bosnia. In total, the number of deployments in 1999 was about 40 percent higher than in 1993–1994.

In addition to involving large numbers of soldiers, the Balkan operations also involved longer tours than other operations. Longer de-

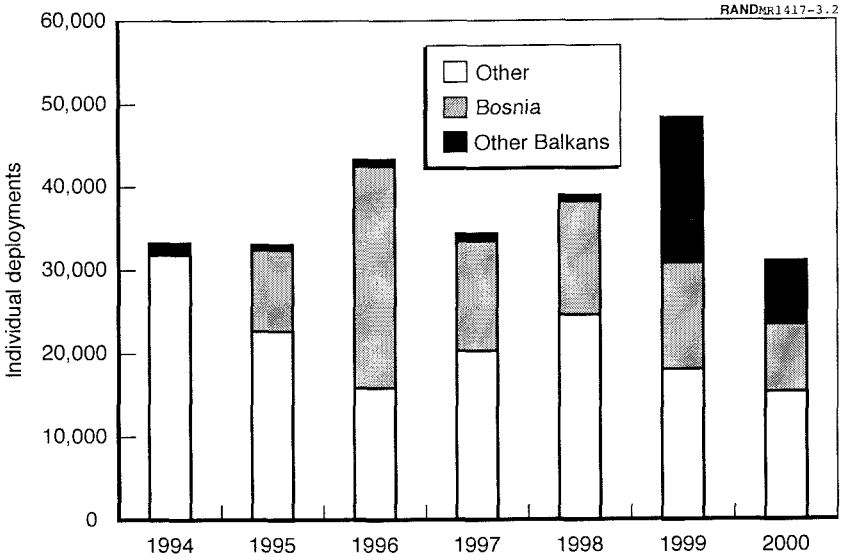

Figure 3.2—Major Deployments by Location, 1994–2000

[7]"Bosnia" in this figure includes deployments to Hungary as well as those for Bosnia itself. There is no specific country coded for Kosovo. In this figure, "Other Balkans" includes deployments coded as Macedonia, Yugoslavia, and Albania. The large increase in 1999 was due to the deployments of forces in support of peacekeeping in Kosovo, which included forces going to Macedonia and Albania as well as to Kosovo.

ployments are believed to have more effect than short deployments on the quality of life of soldiers and their families.

How long have deployments lasted for most soldiers? Figure 3.3 shows the average deployment length for the locations described above. Prior to 1995, the average deployment had lasted about 90 days. The Bosnia mission clearly added a much longer tour length to the mix; in 1995 and 1996, many of the personnel served a nominal one-year tour in Bosnia. Over time, this declined from a high of 241 days in 1995 to 180 days in 1998. Shortly thereafter, however, the Kosovo mission began, involving another series of longer-than-normal deployments.

However, note that the average length of "other" (non-Balkan) deployments also rose after 1994—from 90 days in 1994 to more than 120 days in 1995 and 1996. Therefore, the average length of a deployment increased across the board, a result that was due only in part to involvement in the Balkans.

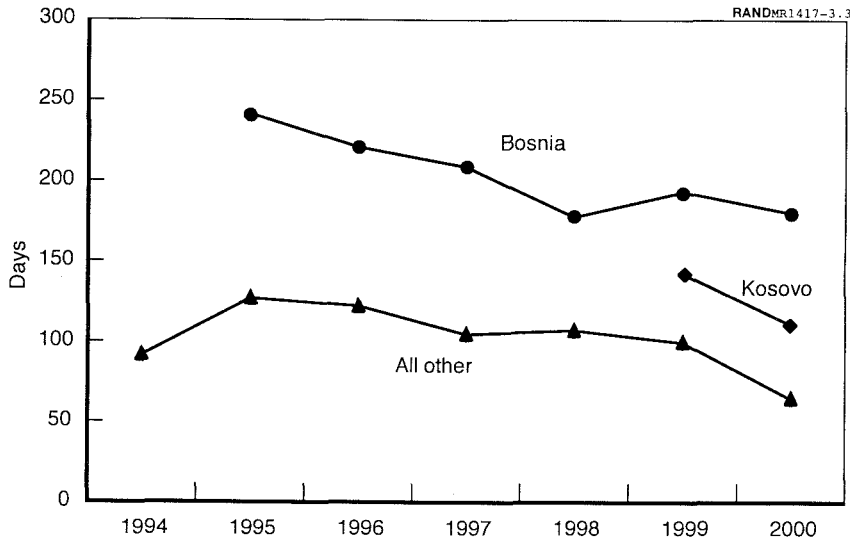

Figure 3.3—Average Length of Deployment by Location, 1994–2000

Soldier-Days Deployed Overseas

Both the size of deployments and the length of those deployments affect the total number of days spent by soldiers on deployed missions. For example, having 7,000 soldiers on duty in Bosnia for 365 days a year means about 2.5 million soldier-days deployed—a measure of the total burden on the Army. We have calculated, in similar fashion, the total number of days all soldiers in the Army spent on major deployments as captured in the personnel system. Figure 3.4 depicts the total number of soldier-days deployed during each year from 1994 onward. This emphasizes the effect of the Balkan deployments on the total time that Army personnel were deployed in 1996 and later years. Moreover, the pace of "other" deployments—such as missions to Kuwait, Saudi Arabia, Egypt, and Latin America—has not abated. Instead, the addition of Balkan operations established a new, higher level of continuing activity.[8,9]

Clearly, overseas deployment activity increased markedly in the late 1990s. Compared with a base of about 2.5 million days in 1994, the pace essentially doubled, to around 5 to 6 million days during the years 1997–1999 (after a peak in 1996). This was not visible in the DEPTEMPO data because they go back only to 1997. Putting the two data sources together, it is clear that the rising activity rates shown by DEPTEMPO during 1997–2000 did not represent a temporary aberration or a "blip." They occurred in the context of an upsurge in overseas activity starting several years before. This change, relative to a less-active base period, is one factor that has created a widespread sense of faster tempo and pressure across the military services.

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[8]This is also evident from counts of the "instantaneous" number of soldiers deployed at any given time. Since 1994, the Army has typically had between 5,000 and 7,000 soldiers deployed to non-Balkan operations at any point in time. The Balkan operations added an average of 10,000 to 15,000 soldiers to that figure (more during the spike in 1996). See Appendix C for details.

[9]Of course, some of the "other" deployments may grow or change in character over time, and some of the changes may generate added pressure. For example, some deployments to Latin America are now treated as temporary duty, to which the soldier goes without dependents, rather than as regular moves with dependents. Similarly, deployments to the Middle East, which grew after the Gulf War, often involve temporary duty. Such policies avoid the official establishment of a permanent U.S. presence in sensitive locations.

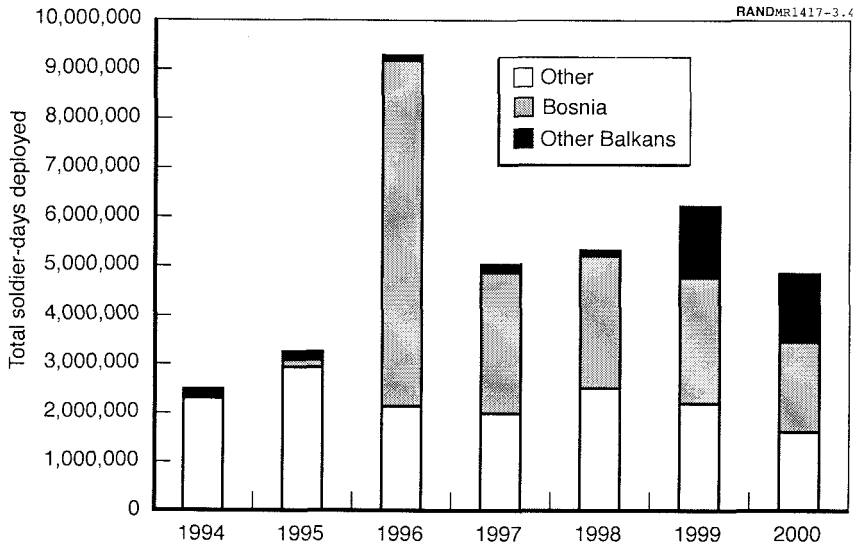

Figure 3.4—Total Days Army Personnel Were Deployed, 1994–2000

Still, even these increased deployments account for a modest fraction of the Army's personnel resources. The 9 million soldier-days for 1996 represents about 5 percent of the total soldier-days available from a force of roughly 500,000 personnel. The smaller figures for later years, of course, account for less—between 2 and 4 percent.[10] Even if one takes only soldiers in TOE units as the base—which would include about 321,000 people at any given time—the fraction is well below 10 percent.

REPEAT DEPLOYMENTS

The increase in the number of deployments has given rise to apprehension in the military community about the cumulative burden on soldiers who remain in the Army over many years. It is not uncommon to hear anecdotes about particular soldiers who have deployed

[10]Recalculating the burden in this way for each year produces a picture that is essentially the same as Figure 3.4. See Appendix C.

to operations year after year, or who transferred from one post after a deployment only to be confronted with an impending deployment from their new post. An often-expressed concern is that while many soldiers may not deploy at all, other soldiers may be deployed many times, and that such repeat deployments are likely to have an effect on morale and ultimately on the willingness of soldiers to remain in the Army.

To determine how widespread this problem might be, we analyzed the frequency of deployments by the same individual over a period of three years. Such a period reasonably approximates the length of an assignment or tour of duty for many soldiers. Table 3.1 shows the number of soldiers who deployed one time, two times, and three or more times during each of several three-year periods. The number of soldiers with multiple deployments increased, from about 8,000 in 1994–1996 to a range of 13,000 to 16,000 in the later periods. However, the number of soldiers who deployed repeatedly is small in relation to the total force. For example, in the period 1997–1999, about 15,400 deployed two or more times. During that period the active Army contained about 500,000 soldiers at any given time; in addition, 75,000 to 90,000 new accessions arrived during each year (while a similar number separated). Thus, the fraction of all available soldiers who deployed repeatedly was between 2 and 4 percent, depending on how one defines the base.[11]

This finding holds up even when longer periods of time are considered, as detailed in Appendix C. For example, during the entire seven-year period from 1994 through 2000, the personnel data show only about 33,000 soldiers who deployed twice and 8,000 who deployed three or more times. Again, however the base is calculated, those rates imply that fewer than 4 percent of the Army's soldiers experienced more than one deployment to major operations and exercises.

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[11]The appropriate base for calculating a percentage could vary depending on one's purpose. One possible base is simply the average end-strength over the period, which was 485,000 during 1997–1999. Using that base yields a rate of 3.2 percent (15,432/485,000). Over a three-year period, however, a large fraction of the new arrivals would complete training and be eligible for deployment, and others would separate or be so near to separation that they would not be eligible. We do not have data on all these flows or the policies that would define eligibility. But clearly the base could easily be more than 700,000, which would imply a rate of 2 percent.

Table 3.1

Number of Soldiers Deployed One, Two, and Three or More Times by Three-Year Periods

Number of Deployments	Three-Year Period				
	1994–1996	1995–1997	1996–1998	1997–1999	1998–2000
One	92,571	91,825	88,692	87,808	88,842
Two	7,507	8,346	11,721	13,113	11,694
Three or more	622	671	1,368	2,319	1,875
Total	100,700	100,842	101,781	103,240	102,411

Because of concern in the Army about the potential for ill effects from repeated deployments to locations like Bosnia or Kosovo, we examined in some detail the enlisted soldiers who had multiple deployments in the 1997–1999 period. The results of that examination showed very few soldiers with repeat deployments to the Balkans. In addition, and contrary to some expectations, the total time deployed for soldiers with multiple deployments was not noticeably greater than for those with only one deployment. This again indicates that soldiers with multiple deployments were likely to have multiple *short* deployments and not multiple long deployments.[12]

AMOUNT OF TIME DEPLOYED

To tie together all of the above observations, we examined the total amount of time that soldiers were away on major deployments over a designated period. Interest in that calculation springs from a concern about equity. While most soldiers do not deploy at all during a given year, some must deploy for long periods. For example, during the Stabilization Force (SFOR) 4 and 5 rotations to Bosnia in 1998–1999—supported by the 1st Cavalry Division—some of the division headquarters personnel were deployed for an entire year. Some leaders were also deployed to Bosnia to participate in planning sessions and to become familiar with the location and mission before

[12]See Appendix C for more discussion of multiple deployments, comparisons between enlisted and officer personnel, and comparisons among Army branches.

the actual deployment. Other field-training activities in preparation for the deployment would further increase the amount of time that soldiers spent away from home.[13]

Time Deployed in a One-Year Period

An era of intense activity, such as the Bosnia and Kosovo operations, is bound to affect some soldiers disproportionately. We would expect that during any six-month or even one-year period we would find some soldiers away much of the time while others would be away for only a short time or not at all. Figure 3.5 illustrates the trends in recent periods. It shows the number of soldiers who were deployed more than 120 days (one-third of the time) in each year. Clearly, the number of personnel deployed for more than 120 days in a calendar year increased markedly in the period after 1994. In 1994, only 4,700 soldiers spent more than 120 days deployed. In 1996 (the peak year from 1994 through 2000), more than 34,100 soldiers met this criterion, a sevenfold increase. In 1998–2000, the number hovered between 20,000 and 25,000—still well above the figures for 1994–1995. Virtually all of these increases were due to deployment to the Balkans. These kinds of increases have created an impression that long deployments have become more common, and perhaps common enough in a soldier's career to pose a problem.

Time Deployed in a Three-Year Period

Over a period of a year or less, such intensive periods of activity are not unusual and may even be expected within the military. However, problems would certainly arise if some soldiers were spending an inordinate amount of time deployed over a period of several years. Repeated long deployments during a single assignment or during repeated assignments over a few years might have a negative effect both on the individual soldier and on others who might fear being similarly affected in the future. In an effort to look more closely at

[13]For example, persons scheduled for an SFOR rotation were deployed to a Combat Training Center for preparatory exercises, but such intratheater deployments would not be reliably recorded in the personnel data system.

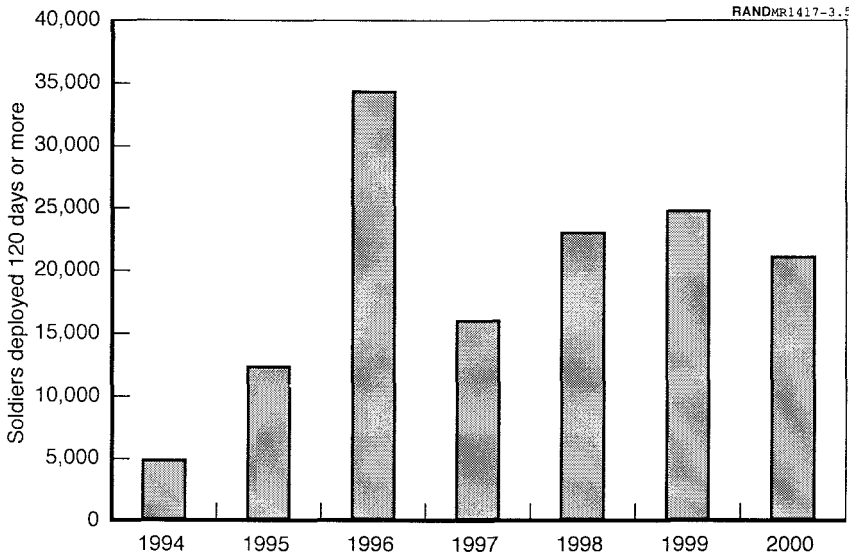

Figure 3.5—Number of Soldiers Deployed 120 Days or More per Year, 1994–2000

this concern, we examined total time deployed by soldiers over three-year periods of observation.

Figure 3.6 shows how many soldiers would meet certain deployment thresholds during a three-year period. These data indicate that relatively few soldiers spent a high proportion of time deployed over any three-year period. For example, consider soldiers who were deployed for more than 180 days over a three-year period (represented by the gray- and black-shaded segments of the bars in Figure 3.6). Such soldiers would be deployed for one-sixth of the time, an amount that would generally be viewed as moderate. In the peak deployment period (1996–1998), fewer than 37,000 soldiers spent more than 180 days deployed. That number represents less than 10 percent of the personnel inventory, however the base is calculated. In the other periods, a smaller fraction of soldiers spent that much time deployed.

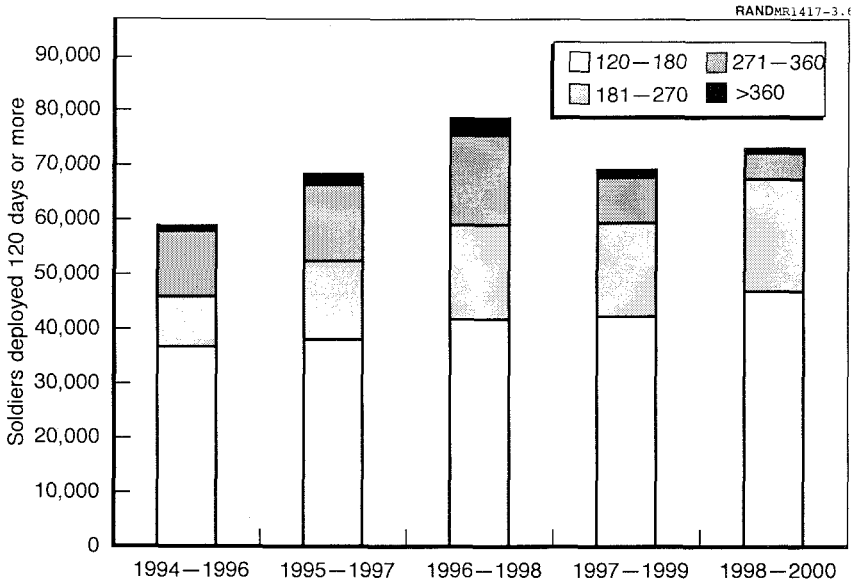

Figure 3.6—Personnel Deployed More Than 120 Days over Three Years

A more intensive level of deployment would be 360 days deployed during a three-year period—the black-shaded segments of the bars. That would be one-third of the time, or the level at which the FORSCOM policy would indicate a unit becoming "amber" rather than "green." During the peak period of 1996–1998, only about 3,700 soldiers spent more than 360 days deployed.[14] Even during that period—when fairly large deployments with six-month tour lengths were common—fewer than 1 percent of the force spent one-third of their time deployed.

A Mitigating Factor: Rotations Among Assignments

Why do these over-time numbers turn out so low, given the evident sense of high tempo in many units? One factor that mitigates the

[14]On average during the period since 1994, there were fewer than 1,700 soldiers who met this criterion.

deployment burden over a soldier's career is the practice of rotating personnel among different units and types of assignments. Even when soldiers experience a long deployment during a TOE assignment, such as a tour in Bosnia or Kosovo, that event tends to be a one-time occurrence, or at least a very infrequent event over a career. For most career soldiers, TOE assignments are interspersed with assignments to TDA organizations, where overseas deployments are much more infrequent if they occur at all.

This can be illustrated by the patterns for soldiers in the Armor branch. In recent years, Armor soldiers have experienced the most time away from home, as shown by the DEPTEMPO data in Chapter Two. Over a career, however, the Armor soldier who remains in the Army can expect to spend more than 40 percent of the time in TDA assignments. Table 3.2 shows the percentage of TOE and TDA assignments available for enlisted Armor personnel (career management field 19). Recall from earlier that less than 5 percent of all deployments come from TDA organizations. Therefore, career personnel are likely to be essentially protected from deployments during their TDA tours. That pattern helps explain why we found so few personnel who experienced multiple deployments over three-year or even seven-year periods.

Table 3.2

Distribution of Armor Authorizations, by Seniority and Unit Type

	Percent of Authorized Positions, by Type of Unit		
Grade	TOE Units	TDA Units	Total
Junior (E1–E4)	91%	9%	100%
Senior (E5–E9)	54%	46%	100%

SUMMARY

Similar to the results we saw in Chapter Two for the DEPTEMPO data, the analyses of individual deployment data show a substantial rise in deployment activity, which began in 1995 and continued

throughout the decade. The rates of deployments and lengths of tours rose sharply between the 1994–1995 and the 1996–2000 timeframe. Overall, the activity rate more than doubled, as measured by the total number of soldier-days away on major deployments.

Nonetheless, it is difficult to see from the personnel deployment data how the level of tempo could be the sole cause of the widespread concerns about potential ill effects. While the tempo rates are rising, they still account for a small fraction of total soldier-days and affect a modest fraction of soldiers at any time. For example, most soldiers do not deploy at all during a given year. Those who do deploy may be away for a long period—typically six months or even up to a year for the Balkan deployments—but fewer than 4 percent are subject to repeat deployments. In total, over a three-year period only a modest fraction—fewer than 10 percent of all personnel—were away on major deployments more than one-sixth of the time; fewer than 1 percent were away more than one-third of the time. In part, this is the inevitable result of the regular rotation of soldiers among assignments, which over the course of a soldier's career will include assignments to nondeploying TDA units.

This does not reduce the impact on units, soldiers, and families of deploying even once to Bosnia or Kosovo. And it must be recognized that the deployments just cited are in addition to the normal intratheater training deployments, which we outlined in Chapter Two. However, even the entire picture does not explain the evident concern within the defense community about the pace of deployments and operations. We turn now to a discussion of other aspects of deployments and other demands on units and soldiers that may help explain this seeming disconnect between perceptions and the actual situation as shown by the empirical data.

Chapter Four

DYNAMIC EFFECTS OF DEPLOYMENTS: AN ILLUSTRATION

As we observed a number of times during visits to units, it is not just planning and executing the deployments that put stress on the units and their personnel. Other training and operational activities consume time and attention. Permanent change of station (PCS) moves and other movements of personnel also affect a unit's ability to execute a deployment and exacerbate the difficulties caused by the deployments themselves. In peacetime, a unit does not just pick up as a unit and deploy to a "small-scale contingency" (SSC) as it would to a combat operation in wartime. The adjustments that must be made both for operational and for personnel reasons cause additional turbulence and workload for the unit's leadership and personnel. They also cause turbulence in other Army units and elsewhere in the personnel system.

These problems were highlighted by a recent RAND Arroyo Center analysis of unit rotations to the Bosnia operation. In this chapter we briefly review that analysis, describing the amount of turbulence generated by the Bosnia deployment and the factors that drove it. The results illustrate why even small deployments can generate extensive turbulence and management difficulties.[1]

Upon first examination, Bosnia seemed a modest-sized deployment. Its primary activity, Task Force Eagle, involved only about 7,000 soldiers at its peak in 1998–1999. However, it was a continuing deployment—a series of rotations—that imposed consecutive demands on

[1]For a more complete discussion of the research and related results, see Polich, Orvis, and Hix (2000).

a series of units. During 1998 through 2000, those rotations were supported primarily by units stationed at Fort Hood, Fort Drum, Fort Riley, and Fort Carson, and by a National Guard division headquarters.[2] Both operational conditions and personnel constraints made these deployments more demanding than one might expect *a priori.* Part of the problem was that mounting such an operation is a dynamic process—not just 7,000 soldiers but also unit preparation, recovery, personnel exchanges, and so forth. And that process is superimposed as a *unit* rotation on an *individual* replacement system. As we will see, the two systems operate on a different logic—each with its own imperatives—and they inherently cannot mesh smoothly.

OPERATIONAL CONSTRAINTS

Operational constraints for peacetime deployments impose workload and uncertainties that would not exist in a wartime environment. For a major theater war or large contingency operation like that conducted in the Persian Gulf, the units would deploy as they are organized and as they train in peacetime. For SSCs, like those in Bosnia and Kosovo, the units are more likely to be reorganized (often described as tailoring) in order to more closely align the deploying organization to the particular demands of the SSC. The resulting "task force" may not closely resemble any particular unit that existed at the home station.

This tailoring for a SSC like Bosnia includes both additions and deletions from what a unit may possess in peacetime and from what the unit might have planned to take to a major conflict. For example, a unit going to Bosnia may not need its full complement of heavy armor and artillery; thus, those pieces of equipment and their personnel would remain behind when the rest of the unit deploys. On the other hand, the unit may need additional military police, military intelligence, civil affairs, and public affairs capability. These ele-

[2]Stabilization Force (SFOR 4–7) rotations commenced at the following dates, supported by the units indicated: September 1998, Fort Hood, 1st Cavalry Division; March 1999, Fort Hood, 1st Cavalry Division; August 1999, Forts Drum and Riley, 10th Mountain Division; March 2000, Texas Army National Guard, 49th Division HQ, and Fort Carson brigade.

ments would be drawn from other units and realigned to deploy with the resulting task force to the SSC location.[3] In addition, tailoring may be necessary to stay within strength caps imposed for political or other reasons. U.S. forces deploying to Bosnia, for example, were given strength ceilings that could not be exceeded even though the units were expected to deploy at a C-1 readiness status, indicating full operational capability.

As a result of these constraints, the task force commander and his staff must prioritize and decide which personnel may be the least needed for the specific mission the task force is to accomplish. These factors place added responsibilities on the planning staff to ensure that the most effective organization is created, trained, and deployed. These tailoring actions themselves may also impose additional training requirements.

In addition, tailoring creates uncertainty for soldiers about who will deploy. For example, a particular division may be named months in advance to support a particular rotation to Bosnia. However, the CINC's staff, Army Forces Command, and the supporting unit must negotiate which types of units are required for that rotation and which specific subelements will participate. Therefore, although a soldier may know that his division is scheduled to support an upcoming deployment, he may not know whether he personally will participate until fairly late in the planning process. Conversely, a soldier in a nondeploying unit may believe he is exempt but later learn that his unit (or he as an individual) will be added as part of the tailoring process.

Training requirements arise both to prepare for the specific requirements of the SSC and to help create the unit cohesiveness and confidence that may be lacking as a result of the tailoring or cross-attaching of disparate organizations. First, the unit may need to train on missions and tasks beyond those normally associated with its wartime mission. Units deploying to Bosnia, for example, went through both a train-up at home station and a rotation to the Joint Readiness Training Center at Fort Polk, Louisiana to prepare for the unique requirements and rules of engagement in Bosnia.

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[3]For particular illustrations of this, see McNaugher, Johnson, and Sollinger (2000).

PEACETIME PERSONNEL CONSTRAINTS

While operational and training considerations impose additional workload and stress on the units, it is the personnel effects that are often cited as the greatest concern. The personnel effects result primarily from peacetime policies and rules that constrain the options open to the units deploying to a SSC. In wartime, those constraints would be lifted as part of the emergency provisions that typically accompany the outbreak of hostilities. But in peacetime the constraints remain, for very good reasons that stem from the need to continue managing the force, sustaining recruiting and retention, and maintaining overall force readiness to fight a major conflict.

Peacetime personnel policies for deployments affect who is eligible to deploy, how long they may be deployed, and eligibility for reassignments after the soldiers return from the deployment. Nondeployability (i.e., the status of soldiers who, for personnel policy reasons, are ineligible for deployment) creates a broad spectrum of effects on deploying and nondeploying units. It was one of the unexpected problems that came up when units began preparing for deployment to Bosnia from locations in the United States.

Nondeployability

The most important observation from the Arroyo Center's analysis of the Bosnia deployment—and the driving factor of numerous secondary effects—is the high rate of peacetime nondeployability among soldiers in units.

Table 4.1 shows rates of personnel nondeployability for Bosnia, forecast during July 1998–October 1998 to pertain to three units at the time they would deploy (September 1998 for the rotation supported by the first brigade of the 1st Cavalry Division, and August 1999 for the rotation supported by the 10th Mountain Division and Fort Riley).

The first row of the table indicates that the percentage of personnel who cannot deploy in wartime hovers around 4 percent, as is typically reported in the Unit Status Report. But as the table also shows, two other factors drive up peacetime nondeployability rates. First, the rules governing these rotations provided that a soldier could not

Table 4.1

Peacetime Nondeployability

Reason for Nondeployability	Percent of Soldiers Nondeployable, by Unit/Installation		
	1 Cav	10 Mtn	Fort Riley
USR nondeployable (wartime)	4.0	3.9	3.5
PCS or ETS (in 90+45 days)	20.0	16.9	21.8
Stabilized (returning from unaccompanied tour)	11.6	18.6	14.7
Total	35.6	39.4	40.0

deploy to Bosnia if he was scheduled for a PCS move or expiration of term of service (ETS) within 135 days—allowing a minimum of 90 days in theater followed by 45 days to return to home station, pack up, arrange for household moves, out-process, take leave, and so forth.[4]

Second, some soldiers are stabilized in their current assignment—protected against deployment—because they have recently returned from other overseas duty (dominated in this table by Korea rotations).

These three factors, taken together, drive the total nondeployability rate up to 35 to 40 percent. It is also noteworthy that this rate is uniform across installations. Arroyo Center researchers found this same general pattern across all posts; it was not unique to any one area or element of the force.

Turbulence

One of the first-order effects of nondeployability is extensive turbulence. Because of the nondeployable personnel in the deploying units, the Army had to move other personnel to bring the unit to its

[4]PCS moves rotate military personnel between United States or overseas locations. ETS reflects an essential feature of limited contracts for military service; at ETS, an enlisted soldier may leave the Army.

required deployable strength. Figure 4.1 from the recent study shows the potential impact of these personnel movements.

This indicates the situation that the 1st Cavalry Division faced when the division staff began planning for their first brigade rotation to Bosnia. (In the end, the deployment was not actually executed in this way; the staff had to draw upon many more sources than just within their division. However, this illustration shows the magnitude of the challenge and why the effects are never limited to one division.)

Illustrating the situation for 19K soldiers (armor crew members), Figure 4.1 reveals that in the two deploying armor battalions (shown as "deployed units") there were authorizations for 528 19Ks. Another 884 19Ks existed in other units within the division, which were not scheduled to go to Bosnia. However, of the 528 soldiers originally in the unit's authorized strength, an estimated 40 percent would be nondeployable. That meant that only 317 soldiers from the original unit could actually deploy (if it had been fully manned at the outset). The remaining 211 nondeployable soldiers would have to move to a stay-behind unit, and 211 other soldiers from those units would have to move into the deploying units to fill them to 100 percent with deployable personnel.

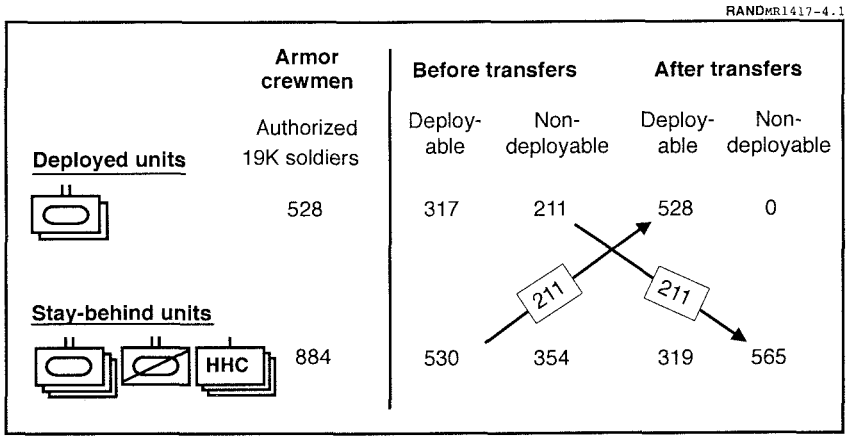

Figure 4.1—Turbulence Caused by Replacing Soldiers Before Deployment

The result of this process would be that 64 percent of the soldiers in the stay-behind units would be nondeployable for Bosnia. Obviously that would complicate supporting a successive deployment immediately following the first brigade's rotation (which, in fact, is what the 1st Cavalry Division had to do). Naturally, to avoid this situation the deploying units were filled from sources beyond the 1st Cavalry Division: other units at Fort Hood, and "passbacks" that were filled from other installations. That created ripple effects well beyond Fort Hood.

The above analysis led to several key conclusions, which are likely to apply not only to the Bosnia rotations but to other peacetime SSCs:

- First, small deployments—Bosnia involved only 7,000 people in theater—have larger ripple effects across the entire force.
- Second, they create extensive turbulence, which in turn has the potential to undermine Army readiness and adversely affect the quality of life for soldiers and their families.
- Third, these effects are widespread across the Army. They are *not* limited to a few specific subelements. For example, these problems could not be easily solved by buying more support structure at the expense of combat structure, or vice versa.
- Fourth, the end result is to increase pressure on Army end-strength and structure. The dynamics of this system clearly use more people than a static viewpoint would suggest.

These effects, arising from the dynamic nature of the personnel system interacting with unit deployments, may account for much of the difficulty that the Army and the other military services have experienced with SSCs. Unfortunately, given the nature of the problem, there is no single evident solution. Although a number of ameliorative measures might be considered—such as reducing turnover in the Army personnel inventory, changing from unit rotations to individual rotations, drawing more upon personnel in the Reserve Components, or increasing active Army end-strength—all such solutions involve tradeoffs against goals that are widely held to be important, by both the Army and DoD.

For example, moving to a system of individual replacements in the Balkans would avoid concentrating deployment turbulence in a sin-

gle unit by drawing personnel from all units to support the SSC. However, this would be achieved at the expense of creating a significant amount of turbulence in all units.[5] Similarly, relying more on the Reserve Components would relieve some of the pressure on the active Army. In fact, the Army has already done so by using a wide range of reserve support elements and some reserve combat elements for certain Balkan rotations. However, those reserve units have their own missions to perform, and reservists are also affected by "time away from home," which in their case often means time away from their civilian jobs as well as families.

This situation suggests the essential problem facing the Army and the other military services. The existing force structure, by and large, is already committed to certain functions and locations. To undertake new functions—such as the deployments to Bosnia, Kosovo, Haiti, and Somalia—the Army must divert some personnel who are already committed. But, as illustrated above, it is not simple to deduce which personnel will be diverted or which units will be affected, let alone to quantify the effects on unit readiness. What is certain is that the effects range well beyond the particular units that are selected to deploy.

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[5]See Polich, Orvis, and Hix (2000).

Chapter Five

OBSERVATIONS AND CONCLUSIONS

Since the mid-1990s, the pace of operations and the resulting "tempo" in the military services have been subjects of growing concern, both within the defense community and among the general public. It is usually argued that high tempo and overseas deployments place added burdens on soldiers, primarily by taking them away from their home station and increasing the amount of household disruption and family separation that is inherent in military life. Such effects, if they are real and persistent, could ultimately undercut personnel retention and recruiting. It was precisely for these reasons that Congress enacted new legislation requiring additional compensation for military personnel who are deployed for lengthy periods.

As this report has indicated, however, tempo and its effects are not simple issues. First, the Army data systems discussed here, while sufficient for determining overall levels of unit and personnel tempo, provide only a partial picture of deployment history for individual soldiers. Second, the most visible aspect of tempo—the amount of time spent away from home—is only part of the phenomenon. Deployments also increase workload, shift the focus of training, and require cross-unit movements of personnel in ways that affect both individual quality of life and unit readiness. To paint the full picture, the Army (along with the other services) needs a broader mechanism for tracking the various types of deployments, unit activities, and workload.

Despite that limitation, we have found existing data informative for describing some key aspects of recent deployments in the Army's Active Component forces. The first observation is that, over time,

Army deployment levels have increased appreciably. DEPTEMPO data indicate that for soldiers in TOE units, the average time deployed rose nearly 30 percent between 1997 and 2000. The number of units with lengthy periods away from home was also up sharply. For example, the number of units reporting more than 120 days of annual DEPTEMPO more than doubled (from 94 to 222 units) since reporting began in 1997. However, the fraction of the force affected remains relatively small. Out of 1,400 units reporting, only 222 had 120 days or more DEPTEMPO in the year ending October 2000, and only 89 had 180 days or more.

How does this affect the typical soldier? The DEPTEMPO data show that the average soldier in TOE units was "away from home station" for about seven days per month, counting all types of deployments. That implies about 85 days away in a 12-month period. Within those 85 days, the DEPTEMPO data allow us to distinguish two primary classes: within-country deployments (to local training areas or Combat Training Centers) and overseas deployments (on operational or humanitarian missions). The majority of the 85 days were for within-country deployments. Only about 22 days were attributable to operational or humanitarian missions, typically to SSCs in overseas locations.

Of course, these results varied by skill and type of unit. The average soldier in an Armor unit was away almost 10 days per month, compared with less than 5 days for members of some types of units. This reflects the fact that the combat arms branches spend considerably more time in field training than other branches. The support branches, however, experience a large proportionate increase in time away when a deployment occurs, and they must continue supporting the installation even when some of their members are deployed.

The individual personnel data, which go back to 1994, confirm that these trends have been under way for most of the past decade.[1] These data show that rates of major deployments and lengths of tours rose sharply between 1994–1995 and the 1996–2000 timeframe,

[1]The personnel data are limited, because they cover only major overseas operations and exercises, but they allow us to take a longer view for the aggregate Army and to examine a given soldier's experience over a career rather than at just one point in time.

largely because of the Bosnia and Kosovo operations. When it occurs, such a deployment is typically a disruptive event in a soldier's life; it may also be unplanned. Moreover, the recent deployments, dominated by Bosnia and Kosovo, were for lengthy periods—6 months in most cases, and up to 12 months in others (e.g., division staff).

Nonetheless, the impact has been confined to a modest fraction of the total Army, which contained about 500,000 soldiers during most of this time period. During a given year, most soldiers do not deploy at all. Those who do deploy may be away for long periods, but fewer than 4 percent are subject to repeat deployments during a three-year period. The same observation holds true over a seven-year period: Repeated contingency deployments are experienced by only a small fraction of the force.

A similar picture emerges when one examines the total amount of time that a soldier is deployed over a period of several years. We analyzed three-year periods during the 1990s and found that fewer than 10 percent of the force were away for major deployments more than one-sixth of the time. And fewer than 1 percent were away more than one-third of the time—the equivalent of 120 days per year.

One reason for this is the regular rotation of soldiers across Army assignments. The vast majority of deployments occur among soldiers serving in TOE units. Very junior personnel, such as first-term enlistees, spend most of their time in such units. More senior personnel, however, rotate between TOE and TDA organizations. Armor NCOs, for example, spend over 40 percent of their time in TDA units. Since few soldiers deploy from TDA units, the deployment rate over an entire career would be considerably lower than the rate in a TOE unit.[2]

How much all of the above matters depends to a large degree on the ultimate effects on morale and retention. The scattered and intermittent incidence of deployments may explain why, so far, attempts

[2]The presence of "unaccompanied" tours (without family) complicates this picture further. For example, about 6 percent of Army personnel are in Korea, primarily on one-year unaccompanied tours. Since these are "permanent change of station" moves, they are different in many ways from deployments, but they do increase the amount of family separation experienced by many soldiers during a career.

to find such effects have been inconclusive and ambiguous. Effects upon retention are uncertain. Recent analysis indicates that deployments can exert negative or positive effects on retention, depending on the circumstances and number of deployments experienced by the individual.[3] Overall, however, Army retention rates have been holding steady, consistent with the small number of people impacted. Indeed, some internal Army tabulations indicate that retention rates, if anything, are higher for units that have experienced a deployment.[4]

Both sets of deployment data that we examined lead us to conclude that a simple look at static measures of tempo and deployment statistics (whether the number of soldiers deployed or the number of unit days of DEPTEMPO) does not by itself explain a "tempo" problem. How, then, does one explain the widely felt concerns about tempo? We believe that there is a problem, and that it results from two sources that are hard to measure using traditional military record-keeping systems. The first source, in our view, is the overall workload, generated by the combination of the warfighting mission, the new SSC missions, and the day-to-day demands of operating a unit and installation in peacetime. The workload strain is felt acutely when the unit is not filled to 100 percent in the first place—as is often the case in Army units, particularly in support units.

This workload problem also appears to be unevenly distributed. As we observed repeatedly during visits to units, workload resulting either directly or indirectly from SSC deployments affects two subgroups to a much greater extent. These two subgroups are (1) the commanders and staffs of battalions, brigades, and divisions and (2) the members of support units, primarily nondivisional, that have both deployment and garrison support missions to perform. Commanders and staff officers in TOE units must oversee current opera-

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[3]See Hosek and Totten (1998).

[4]Unpublished tabulations of enlisted retention, Office of the Deputy Chief of Staff for Personnel, 1999. This should not be taken as conclusive, however; unit-specific retention rates can be affected by a host of factors, including tax-exempt payments and bonuses that can affect both the direction and timing of a soldier's reenlistment decision. In addition, recent retention rates for officers have shown some adverse trends, particularly lower retention among captains; that could be an effect of the civilian economy, military workload (see below), or deployments.

tions and training, plan future events, and support the training of higher and lower echelons as a matter of course. When an unexpected deployment occurs, the brigade staff (for example) must plan the new activity, supervise the movement of soldiers and units, support the deployed element while it is overseas, and maintain essential functions for the stay-behind elements at the home station. Support units such as Military Police, Adjutant General, and Finance must train for their deployment mission, deploy in support of SSCs, and also meet the requirements of their garrison support role. This workload, unfortunately, is hard to estimate. To date, there has been no mechanism for collecting systematic information on workload in Army units.

The second source is more subtle, arising from the dynamics of the entire system that must sustain the peacetime force, prepare and train for SSC deployments, and adhere to various peacetime operational and personnel policy constraints. Leaders in field units often noted that other factors often play an important role in the degree of stress and disruption caused by deployments. Even relatively small deployments (particularly SSC deployments) divert the focus of unit leadership, cause turbulence from cross-leveling and tailoring of the force, and require specialized training. Those effects then impact other units, which must supply the filler personnel and support the training and deployment of the deploying force.

The effects of tempo may not be due, therefore, to the pace of deployments by themselves. Rather, it is likely that tempo is coupled with a number of other factors to place stress on the military system. To begin with, during this period many Army units were filled to less than 100 percent of their stated wartime personnel requirement. Although the Army has long operated with this personnel shortfall, its existence becomes an acute problem when commanders must scramble to deploy a unit at nearly full strength.[5] Second, as shown by the analysis of Bosnia deployments described in Chapter Four, even small deployments have larger ripple effects across the force, creating extensive personnel turbulence and disrupting unit training cycles. Third, these SSC deployments must be conducted in the con-

[5]Near the end of the study period, the Army announced a new policy aimed at filling divisional units to 100 percent of their authorized strength. If sustained, that policy would ameliorate this problem for TOE units.

text of a force that has experienced reductions in resources, while still attempting to achieve other paramount goals (i.e., maintaining readiness for a major theater war and training the future soldiers and leaders in warfighting skills).[6] This picture leads us to conclude that the major focus of Army concern about deployments should probably be not on the individual soldier effects but on overall force management, to evenly distribute the burden, minimize short-term readiness impacts, and ensure that longer-term skill development and warfighting capability are sustained.

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[6]There are some indications that today's junior leaders in the Army are receiving less experience in field operations while they are in operational units—the main assignments where such experience can be accrued. See Leed (2000b) for a further discussion of the potential impact on tactical leader development.

Appendix A

UNIT DEPTEMPO DATA

This appendix displays, in the tables that follow, the numerical data on DEPTEMPO rates that were the basis for the figures in Chapter Two.

Table A.1

Average Monthly Reported Unit DEPTEMPO, by Category (Unweighted)

Year/Month	Category A	Category B	Category C	Category D	Total
97/12	1.1	0.9	0.3	0.7	3.0
98/01	0.5	0.4	0.2	0.9	2.1
98/02	1.0	1.2	0.6	1.0	3.6
98/03	1.1	1.3	0.3	1.2	3.8
98/04	1.3	1.0	0.4	1.1	3.7
98/05	1.6	1.3	0.5	1.5	4.7
98/06	1.2	1.3	0.6	1.7	4.6
98/07	0.9	1.2	0.4	1.7	4.1
98/08	1.4	1.3	0.4	1.4	4.3
98/09	1.5	1.4	0.6	1.6	4.8
98/10	1.3	1.3	0.4	1.5	4.5
98/11	1.5	2.1	0.7	1.4	5.7
98/12	1.4	1.4	0.4	1.4	4.7
99/01	0.8	0.6	0.3	1.8	3.5
99/02	1.5	1.7	0.5	1.7	5.4
99/03	1.3	1.7	0.6	1.5	5.1
99/04	1.5	1.5	0.6	1.3	4.9
99/05	1.6	1.7	0.5	1.8	5.6
99/06	1.4	1.6	0.5	1.9	5.5
99/07	1.2	1.1	0.6	2.2	5.0
99/08	1.6	1.3	0.4	2.2	5.5
99/09	1.5	1.6	0.6	2.0	5.6
99/10	1.4	1.5	0.8	2.1	5.8
99/11	1.6	2.0	0.9	1.9	6.4
99/12	1.6	1.3	0.5	1.8	5.2
00/01	1.0	0.8	0.3	1.5	3.7
00/02	1.8	1.8	0.4	1.5	5.5
00/03	1.6	2.0	0.5	1.7	5.8
00/04	1.8	2.1	0.6	1.6	6.1
00/05	1.7	1.6	0.7	1.5	5.6
00/06	1.6	1.7	0.7	1.7	5.7
00/07	1.5	1.2	0.6	1.5	4.8
00/08	1.9	1.5	0.6	1.6	5.5
00/09	2.0	1.8	0.7	1.8	6.3
00/10	1.8	2.0	0.7	1.6	6.0
Average	1.4	1.4	0.5	1.6	4.9

NOTE: Supporting data for Figures 2.1, 2.3, 2.4, and 2.5. Numbers shown are unweighted averages across all reporting units.

Table A.2

Number of Units Reporting Specified Levels of DEPTEMPO, 1997–2000

For 12 Months Ending	Number of Units, by Level of DEPTEMPO Reported							
	0 Days	1–29 Days	30–59 Days	60–89 Days	90–119 Days	120–178 Days	180 Days or More	Total
Nov 98	131	558	397	215	88	68	26	1483
Dec 98	125	517	411	224	95	81	31	1484
Jan 99	123	502	394	242	112	79	31	1483
Feb 99	127	474	397	246	119	90	31	1484
Mar 99	130	449	393	261	120	90	42	1485
Apr 99	128	440	401	239	145	85	48	1486
May 99	134	429	371	277	135	88	50	1484
Jun 99	133	414	373	271	137	98	54	1480
Jul 99	133	416	362	275	128	110	56	1480
Aug 99	131	393	369	261	149	115	59	1477
Sep 99	142	380	356	277	133	129	59	1476
Oct 99	142	364	347	281	148	125	62	1469
Nov 99	157	371	358	253	152	135	63	1489
Dec 99	157	372	356	255	149	142	62	1493
Jan 00	157	372	361	248	153	134	68	1493
Feb 00	157	372	367	241	154	128	73	1492
Mar 00	164	361	360	249	154	131	75	1494
Apr 00	156	353	347	274	144	130	79	1483
May 00	149	357	350	262	153	130	80	1481
Jun 00	155	345	364	244	157	126	89	1480
Jul 00	187	356	357	249	159	119	89	1516
Aug 00	187	336	362	266	151	117	92	1511
Sep 00	186	337	345	262	154	120	97	1501
Oct 00	167	344	352	247	159	133	89	1491

NOTE: Supporting data for Figure 2.2.

Table A.3

Per-Soldier Average Monthly DEPTEMPO by Category, 1997–2000

For 12 Months Ending	Per-Soldier Average Monthly DEPTEMPO (12-Month Moving Average)				
	Category A	Category B	Category C	Category D	Total[a]
Nov 98	1.9	1.7	0.5	1.5	5.5
Dec 98	1.9	1.7	0.5	1.5	5.6
Jan 99	1.9	1.7	0.5	1.6	5.7
Feb 99	2.0	1.8	0.5	1.6	5.8
Mar 99	2.0	1.8	0.5	1.6	5.9
Apr 99	2.0	1.9	0.6	1.6	6.0
May 99	2.0	1.9	0.6	1.6	6.1
Jun 99	2.0	1.9	0.6	1.7	6.2
Jul 99	2.0	1.9	0.6	1.7	6.3
Aug 99	2.1	1.9	0.6	1.8	6.3
Sep 99	2.1	2.0	0.6	1.8	6.4
Oct 99	2.1	2.0	0.6	1.8	6.6
Nov 99	2.1	2.0	0.6	1.9	6.6
Dec 99	2.1	2.0	0.6	1.9	6.7
Jan 00	2.1	2.0	0.7	1.9	6.7
Feb 00	2.1	2.1	0.6	1.9	6.8
Mar 00	2.1	2.1	0.6	2.0	6.9
Apr 00	2.2	2.2	0.7	2.0	7.0
May 00	2.2	2.2	0.7	2.0	7.0
Jun 00	2.2	2.2	0.7	2.0	7.1
Jul 00	2.2	2.2	0.7	1.9	7.0
Aug 00	2.2	2.2	0.7	1.9	7.0
Sep 00	2.3	2.2	0.7	1.9	7.1
Oct 00	2.3	2.3	0.7	1.8	7.1

NOTE: Supporting data for Figure 2.6.

[a]Totals as reported by units in the Unit Status Report; the total may differ slightly from the sum of the categories because of rounding and unit reporting errors.

Table A.4

Per-Soldier Average Monthly DEPTEMPO by Branch, 12 Months Ending October 2000

Branch	Category A	Category B	Category C	Category D
AB	3.2	0.6	0.3	0.0
AD	2.4	1.9	1.4	2.2
AG	0.4	0.2	1.2	0.9
AR	3.3	3.0	0.6	2.7
AV	1.6	1.8	0.5	1.9
CA	1.2	0.5	1.3	3.1
CM	1.7	3.0	0.1	0.4
CS	2.2	2.9	0.8	1.4
EN	2.0	2.4	0.5	1.6
FA	2.7	3.1	0.6	1.5
FI	0.7	0.4	0.1	1.9
HQ	1.1	3.3	2.2	1.2
IN	3.6	2.7	0.5	1.7
MD	1.2	1.2	1.3	1.9
MH	0.0	3.3	2.0	0.0
MI	2.2	1.4	0.3	2.6
MP	1.6	0.9	0.4	2.1
OD	1.1	1.1	0.7	1.4
PA	0.6	1.0	1.0	2.7
PO	0.4	0.4	0.4	18.4
QM	1.9	1.2	1.4	1.4
SC	1.9	2.2	0.6	1.0
SF	1.1	1.9	1.7	3.8
TC	1.6	1.9	0.7	2.0
Overall	2.3	2.3	0.7	1.8

NOTE: Supporting data for Figure 2.7.

Appendix B

INDIVIDUAL PERSONNEL DEPLOYMENT DATA

This appendix describes the sources of the individual personnel data analyzed in Chapter Three and how we edited them to improve accuracy. It also contains the reported numbers of deployments by deployment type code and explains why we omitted CTC and local deployments from the analyses.

SOURCES AND EDITING

The individual-level data used for the analysis in Chapter Three came from the U.S. Army PERnet system. The Datacom/DB Enlisted Database provided information on enlisted soldiers, and the Officer TAPDB/AO Database provided information on officers. These two databases reside on different systems, and while they contain comparable information, they must be accessed separately. Each database is made up of many different files or tables that can be combined to retrieve the desired information.[1] In both the enlisted database and the officer database, the AMD-T table provides deployment information for individual soldiers. The relevant subset of variables includes date deployed, date redeployed, country to which deployed, and current unit.

Periodically, soldiers who have left the service are deleted from the system. For this reason, we began taking quarterly downloads in the mid-1990s in order to create a historical data file for longitudinal

[1] *Enlisted Personnel and Organization Database Using DataQuery,* United States Army Personnel Information Systems Command, unpublished documentation, 1999, p. 7.

analysis. Each quarter we created a file from the current data and appended historical data only for those soldiers who were no longer in the system.

Data integrity has increased greatly over the last few years; however, analysts must still correct obvious problems, especially for those soldiers found in the oldest data. We developed specific rules for error patterns that showed up in the data. The first step was to delete soldiers who were missing both deploy date and redeploy date. We then corrected obviously erroneous dates; for example, if a soldier deployed in May 1996 and was recorded as returning in October 1936, the redeploy date was changed to October 1996. When necessary, we looked for patterns in the distribution of the deploy/redeploy dates for deployments to the same country and from the same unit.

If a soldier had two or more records with the same country code and the same deploy dates but different redeploy dates, then the records were combined into one deployment using the latest redeploy date. However, if using the latest redeploy date would make the deployment longer than six months (one year for Bosnia deployments), then the earlier redeploy date would be used. In addition, if either of these two options overlapped the next deployment, then the redeploy date was recorded as one day before the next deploy date. Likewise, if a soldier had two or more records with the same country code and the same redeploy dates but different deploy dates, then the records were combined using the earlier deploy date. We kept the unit designator from the record with the earlier deploy date or the later redeploy date.

"Negative deployment" errors occurred when the deploy date was recorded as later than the redeploy date. To correct these, we first looked for patterns in the data that might clearly show what the dates should have been. For groups of soldiers in the same unit who went to the same country, we investigated when that particular unit deployed to the specified country and changed the dates accordingly. For negative deployments that did not appear to follow a pattern, both dates were replaced with the most common deploy/redeploy dates for that unit to that country. Otherwise, we simply switched the dates.

If the soldier's deploy date was more than a year before the last download of data and his redeploy date was missing, then it was recorded as six months later (one year for Bosnia) or one day before the next deployment, whichever is shorter. If the deploy date was missing, we assigned a deploy date six months earlier than the redeploy date (one year for Bosnia) or one day after the return of the previous deployment, whichever was shorter. Finally, long deployments to countries other than Bosnia were capped at six months. Long deployments to Bosnia were capped at one year.[2] For our purposes, we deleted deployments that lasted less than a week.

REPORTED DEPLOYMENTS FROM PERSONNEL DATA

The personnel system uses eight codes to capture deployments by category: operational, major training exercises, Combat Training Center (JRTC, NTC, and CMTC), training exercises off installation (non-CTC), UN Staff and Special Forces Teams, counter-drug, domestic civil, and humanitarian international activities. These are reported through SIDPERS, entered either by the unit or at the central personnel service function on the installation (e.g., the G-1 personnel office in a division headquarters). Department of the Army personnel officers believe the deployment data capture all operational, humanitarian, and counter-drug deployments as well as major training exercises directed by HQDA or the major command.

Over recent years, reporting practices for these categories have evolved as additional categories were added or given greater emphasis by instructions from Department of the Army headquarters. In particular, in 1997 CTC rotations were added to the reporting requirement, and in 2000 reporting began for deployments for on-post overnight training or to local training areas off the installation. However, it does not appear that those categories were reported consistently enough to support trend analyses. Table B.1 shows the number of deployments within these categories for 1994, 1997, and 2000. It reveals a large increase in reported deployments for CTC

[2]Imputing a value of one year may lead to a modest overestimate of deployed times, since most Balkans deployments are shorter. However, some of the records lacking redeployment dates may in fact have been long deployments. To avoid understating deployment times, we chose to impute one year.

training beginning in 1997; however, the reported values are lower than we would expect, given rotation schedules for the CTCs and the size of units participating in a typical rotation. The table also shows reports for local off-installation training beginning in 2000, but not before. Because reporting of these two categories—CTC and local training—was not consistent and complete during the entire period, we decided to exclude them from analyses of the personnel data.

Table B.1

Number of Deployments by Reporting Category

Type of Deployment	1994	1997	2000
Operational	32,599	26,769	19,974
Humanitarian	478	1,009	3,274
Major training exercise	194	4,429	9,097
Counter-drug	19	104	250
Domestic civil	4	2	20
Staff/individual training	21	1,126	37
Combat Training Center	9	8,437	7,353
Local off-installation training	8	14	14,314
Type not specified	123	1,217	288
Total	33,455	43,107	54,607

Appendix C

DETAILED TABULATIONS: DEPLOYMENT FREQUENCY FOR INDIVIDUALS

In discussing the deployment results with officials in the Army, we found considerable interest in two issues of "equity" across the force. First was the question of deployment frequency over time and among subgroups: Have deployments affected more soldiers in recent years? Were senior people more likely to deploy than junior personnel? Were some branches more likely to deploy than others?

The second issue concerned repeated deployments. How many soldiers were subject to a large number of deployments? Did they often redeploy to burdensome operations on long tours, such as those in the Balkans? How much time in total did the repeated deployments account for? And, finally, was the experience of repeated deployments particularly onerous for certain branches? This appendix details some analyses to address these questions, using the individual personnel data described in Chapter Three.

This type of concern was usually focused on enlisted soldiers. While officers may be more subject to short-term deployments for some purposes (e.g., administrative reasons or planning upcoming operations), the general feeling was that officers are more likely than enlisted personnel to anticipate this burden and to have backup resources to make it more tolerable. This appendix, therefore, deals primarily with enlisted soldiers.

It bears emphasis, once again, that the personnel data reflect only major deployments and exercises, as we defined them based on the personnel system's reporting categories. As noted in Chapter Three, because of conflicting definitions and changes over time, it is not possible to derive a precise estimate of the fraction of total "time

away from home" reflected in the personnel data. An estimate can be made, however, by considering categories C and D in the DEPTEMPO data system, which appear to roughly correspond to the events captured by the personnel system. Together, those two categories cover about 35 percent of total reported DEPTEMPO. They are, however, the most important and potentially disruptive types of deployments.

DEPLOYMENT FREQUENCY

Number of Soldiers Deploying, 1994–2000

To provide background, Table C.1 portrays the number of soldiers reported as deploying in the personnel data system during the period since 1994.

Note that, according to the Army personnel data, only about 184,000 enlisted soldiers and 27,000 officers undertook major operational or training deployments during the entire period. During this period there were between 479,000 and 541,000 soldiers on active duty in the Army at any point in time. Therefore most personnel in the Army did not deploy at all from 1994 through 2000. Also noteworthy is the modest size of the group with two or more deployments—less than

Table C.1

Number of Officer and Enlisted Personnel Experiencing Deployments, 1994–2000

Number of Deployments	Number of Personnel Experiencing Deployments		
	Officer	Enlisted	Total
One	23,909	146,281	170,190
Two	2,961	30,011	32,972
Three or more	355	7,537	7,892
Total, one or more deployments	27,225	183,829	211,054
Total, two or more deployments	3,316	37,548	40,864

41,000 over a seven-year period. Given the relative sizes of the officer and enlisted populations, it also appears that enlisted personnel were subject to multiple deployments more often than officers.[1]

Number and Location of Soldiers Deployed

Where and when did these soldiers deploy? Figure C.1 shows the number of soldiers who were deployed as of the 15th of each month during 1994 through 2000.[2] The number of soldiers deployed at any point in time has fluctuated considerably since the early 1990s, with peaks occurring during major deployments. For example, before the timeframe of this chart, the Somalia operation in 1993 involved a peak of about 9,000 soldiers and an average of about 5,000 over calendar year 1993.[3] In this chart, Haiti accounted for most of the peak observed in late 1994. The Balkan operations obviously created larger peaks.

After each major deployment, the level dropped back until another major event. What changed in the 1990s was the level of deployment to major operations; it remained at about 15,000 over a five-year period. The deployment to Bosnia peaked at about 22,000 in 1996 but remained at 7,000 to 10,000 until recently, when it dropped to a little over 4,000. While Bosnia was still continuing, a major deployment to Kosovo in 1997 added another 6,000 to the deployed force. These are in addition to the soldiers deployed to numerous other locations around the world. The step up in deployments, coinciding with the onset of Balkan operations in 1996, established a new, continuing level of overseas activity. This change, a marked contrast with earlier levels, is no doubt a major factor underlying the widespread concern about tempo.

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[1]Table C.1 shows 11 times as many enlisted soldiers experiencing multiple deployments as compared with officers. In each year enlisted strength was only 5 times officer strength. Even allowing for higher turnover rates in the enlisted force (typically, 19 percent for enlisted versus 8 percent for officers), the ratio of enlisted to officers in the total over-time population reaches only 7.5 to 1.

[2]The figures for the early part of 1994 may be incomplete and probably understate the actual deployed force. However, such an understatement would not be likely to affect the overall conclusions.

[3]Sortor (1997).

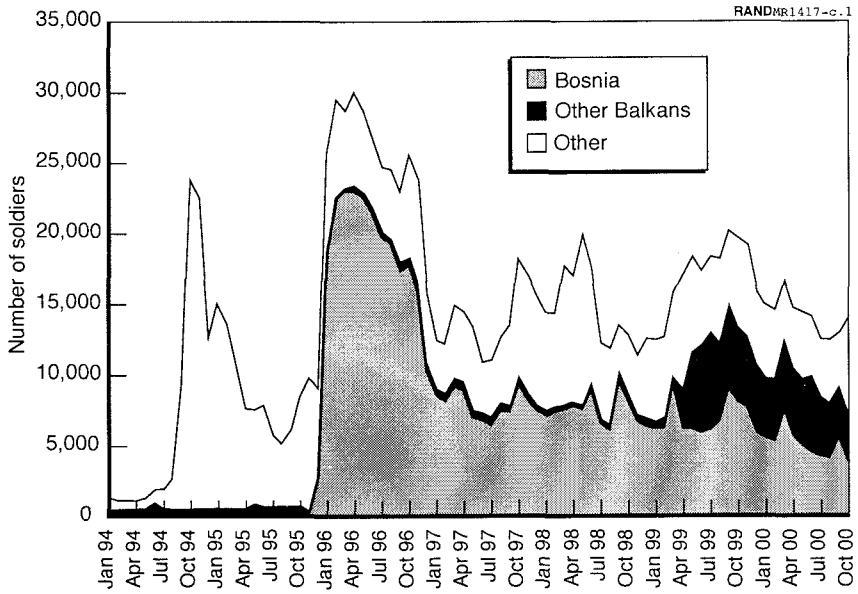

Figure C.1—Number of Soldiers Deployed on the 15th of Each Month

The overall trend can be seen more clearly by smoothing these data into year-long periods, as shown in Figure C.2. This portrayal, based on the same data as Figure C.1, emphasizes the rapid rise in personnel deployed after 1995. Although there was a sharp peak in 1996, reflecting the onset of the Bosnia operation, the level of deployment remained at almost 15,000 soldiers throughout 1997–2000. Those levels are 90 percent higher than the average level in 1994–1995. This pattern is very close to the pattern of total soldier-days deployed, as discussed in Chapter Three.

Of course, the impact of these deployments might vary considerably if the Army's underlying manpower strength had fluctuated widely during the study period. Table C.2 shows Army strength along with an illustrative calculation of the average number deployed relative to strength. Because the post–Cold War drawdown was just ending in 1994–1995, Army end-strength was somewhat larger in those two years than in later years. However, the annual variation in end-strength is small compared with the major upswing in deployment

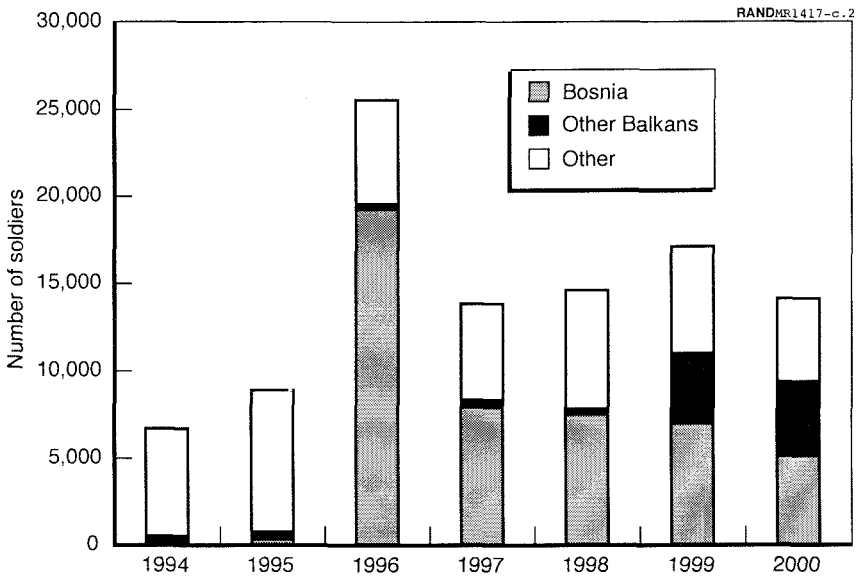

Figure C.2—Average Number of Soldiers Deployed, by Year

activity starting in 1996. Consequently, the "percent deployed" figures rise and fall over time in almost the same pattern as in Figure C.2.

Table C.2

Average Number of Soldiers Deployed Relative to Total Army Strength, 1994–2000

Year	1994	1995	1996	1997	1998	1999	2000
Average number of soldiers deployed	6,717	8,905	25,558	13,856	14,263	17,114	14,110
Total end-strength, active Army	541,343	508,559	491,103	491,707	483,880	479,426	482,170
Deployed, as percent of end-strength	1.2	1.8	5.2	2.8	3.0	3.6	2.9

Deployments by Grade

Some observers, especially commanders in operational units, worried that senior personnel were being called on to deploy more often than junior personnel. This led to concern that such a deployment tempo would have a detrimental effect on the retention of the more experienced soldiers and leaders in the future. We examined the personnel deployment data for both officers and enlisted personnel and found that, in fact, senior personnel were not more likely to be deployed than junior personnel.

Figure C.3 shows the average number of deployments per enlisted soldier by pay grade for 1994–2000. Based on these data, the soldiers in grades E3 through E5 had a greater chance of deployment than the more senior soldiers in grades E6 through E9. We also examined the number of days deployed by grade and found parallel results. Similar analyses for officers also showed no evidence that more senior officers were disproportionately affected by major deployments.

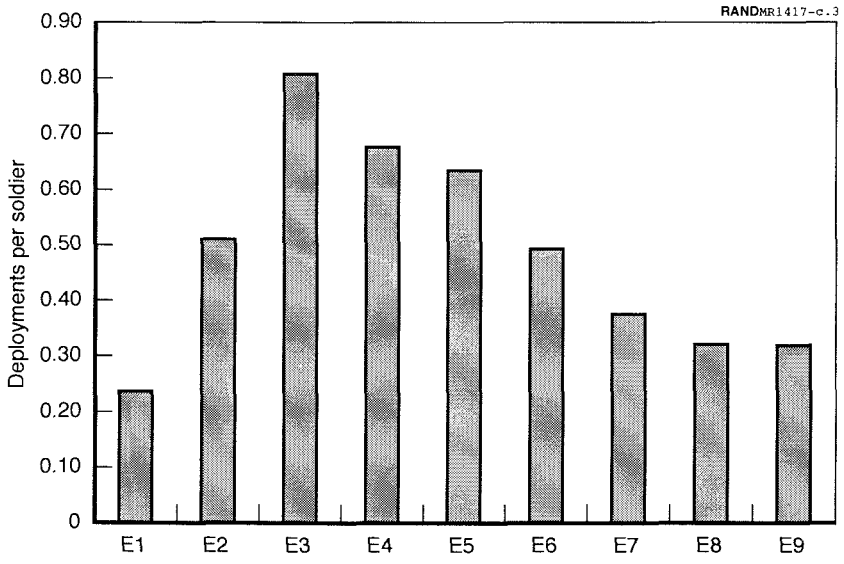

Figure C.3—Deployments per Enlisted Soldier (by Pay Grade), 1994–2000

These results could be influenced by the fact that for most of this period the operations were dominated by combat arms formations. Deployments that utilize combat arms units involve a large proportion of junior personnel, as opposed to humanitarian, logistical support, or advisory activities that call for more senior personnel. In addition, none of the Army data systems include administrative TDY functions or support to the Reserve Components in the CONUS, which call more heavily on the senior personnel. Including such functions would probably increase the overall "time away" burden on senior personnel.

Deployments by Branch

A simple count of the number of deployments by branch, as reported in the personnel system, shows that the infantry branch had about 48,000 major deployments between 1994 and 2000, compared with only about 100 for persons in Public Affairs (PA) units. While infantry has far more deployments than do other branches, infantry units in total have many more soldiers assigned than PA units, for example. Figure C.4 shows the average number of enlisted deployments, on a per-soldier basis, by branch, for soldiers in TOE units. The branch was indicated by the unit to which the soldier was assigned at the time of the deployment.

Note that a soldier assigned to a CA unit would have deployed, on average, almost 3.25 times during the seven-year period, as compared with about one time for the infantry soldier. A soldier assigned to an AG unit could have expected about a 40 percent chance of deploying one time during this period, as compared with a 75 percent chance on average for all enlisted soldiers in TOE units. These results again call attention to the variation in the tempo for soldiers across different unit types. This partly reflects the character and type of operations that are being conducted. In previous analysis of other periods we saw that military police (MP) were very busy (as again is reflected here), but that infantry soldiers were not deployed as heavily.[4] If this period were dominated by deployments like those to Haiti or for humanitarian assistance rather than Bosnia or Kuwait, then we would probably see a different distribution of effects on branches.

[4]Sortor (1997).

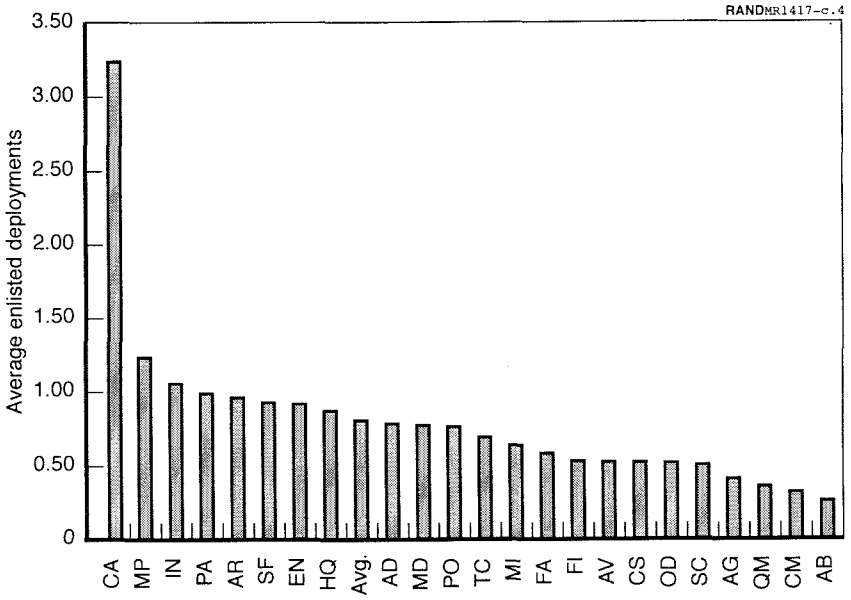

Figure C.4—Average Number of Deployments per Soldier, by Branch, 1994–2000

ENLISTED SOLDIERS WITH MULTIPLE DEPLOYMENTS

In response to interest in repeated deployments within the Army staff, we took a more detailed look at enlisted soldiers with two or more deployments during the 1997–1999 time period. We found that 14,274 enlisted soldiers had multiple deployments recorded in the personnel system during the three years from 1997 through 1999. These 14,274 soldiers accounted for a total of 31,317 deployments. Table C.3 shows the distribution of these soldiers by the number of deployments they experienced. Of the 14,274 soldiers with multiple deployments, more than 80 percent (12,021 soldiers) were cases where a soldier was reported to have deployed twice during this period. Another 13 percent (1,876 soldiers) deployed three times. Only 3 percent deployed four or more times: 294 soldiers deployed four times, and 83 deployed five or more times. Among the latter group, two soldiers deployed nine times, and one soldier was reported to have deployed ten times during the three-year period.

Table C.3

Number of Enlisted Soldiers Experiencing Multiple Overseas Deployments (1997–1999)

Number of Deployments	Number of Soldiers	Percent of Soldiers
Two	12,021	84
Three	1,876	13
Four	294	2
Five or more	83	1
Total	14,274	100

Recall, also, that these percentages are based on the number of soldiers *who had multiple deployments.* That multiple-deployment group, of course, is less than 4 percent of the enlisted force.[5]

A related question was whether these multiple deployments represented repeated deployments to the Balkans. Such deployments are particularly burdensome because they tend to be lengthy. Table C.4 shows the countries to which deployments occurred, for the 14,274 multiple-deployment soldiers. Note that the Balkans did not domi-

Table C.4

Number of Deployments by Country

Country of Deployment	Number of Deployments
Balkans	13,800
CONUS	3,637
Saudi Arabia	2,341
Egypt	2,021
Kuwait	2,386
Other	7,132
Total	31,317

[5]See the discussion on repeat deployments, Chapter Three, for methods of estimating the rate of deployments over time.

nate the set of deployments during this period, for those with multiple deployments, and accounted for only a little over 40 percent of the deployments among these soldiers. Also, of the soldiers with two deployments, only 58 percent had even one deployment to the Balkans; the rest had none.

Even three deployments in a three-year period (one per year) would probably not be considered excessive to most soldiers, depending on the total length of time they were away on all deployments. As shown in Figure C.5, only about 20 percent of those soldiers with three or more deployments (510 soldiers) had more than 360 days deployed during the three-year period. On the other hand, 35 percent (786) of the soldiers with three or more deployments were deployed 180 days or less.

Another concern was whether soldiers in certain branches were being hit with a disproportionate number of the multiple deploy-

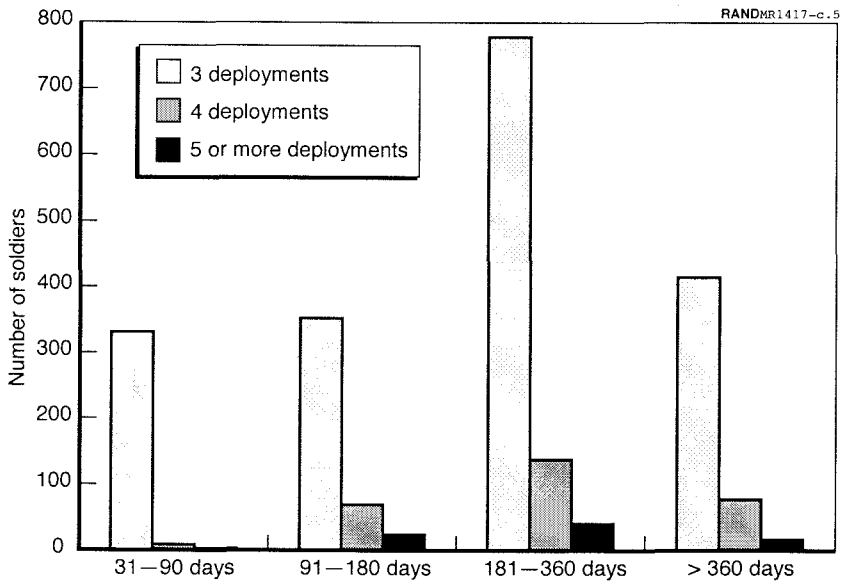

Figure C.5—Number of Enlisted Soldiers Deployed, by Total Time Deployed and Number of Deployments

ments. Figure C.6 shows the number of soldiers with multiple deployments by branch.[6] The Armor and Infantry branches have the largest number of soldiers with multiple deployments; however, the Engineer branch, among others, has a disproportionate number based on its share of the force structure.

Two deployments in three years would probably not be considered excessive as long as the total time deployed was not too long. (Only 885 out of the 12,021 soldiers with two deployments had more than 360 days deployed during the three-year period.) Therefore, we decided to look more closely at those with three or more deployments. Armor, Engineers, Infantry, and Special Forces each had over 300 soldiers with three or more deployments; all other branches had less than 150 soldiers in this category. Some of these branches have

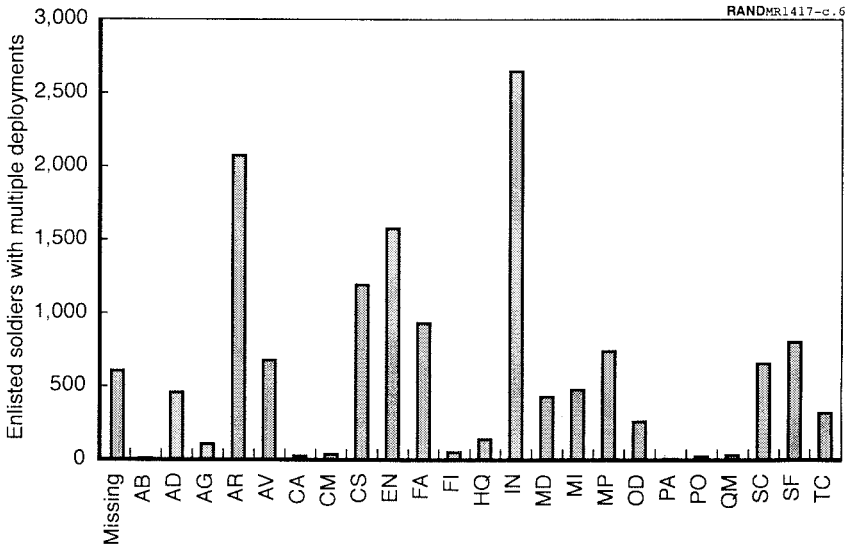

Figure C.6—Number of Enlisted Soldiers with Multiple Deployments, by Branch of Unit, 1997–1999

[6]A missing branch code in this case is usually an indication that the soldier was assigned to a TDA organization; however, a small number of these are due to Unit Identification Codes that could not be identified in the database.

many more soldiers than do others. As shown in Figure C.7, on a per-soldier basis the Special Forces have six times the incidence of soldiers with three or more deployments as most other branches.[7] Most branches have fewer than one soldier in a hundred with three or more deployments during the three years.

One other question was whether the multiple deployments might be having a disproportionate effect on soldiers stationed in Europe. Soldiers in European units accounted for 31 percent of the soldiers with multiple deployments. This is larger than the fraction of the force in Europe and thus would indicate a somewhat disproportionate effect.

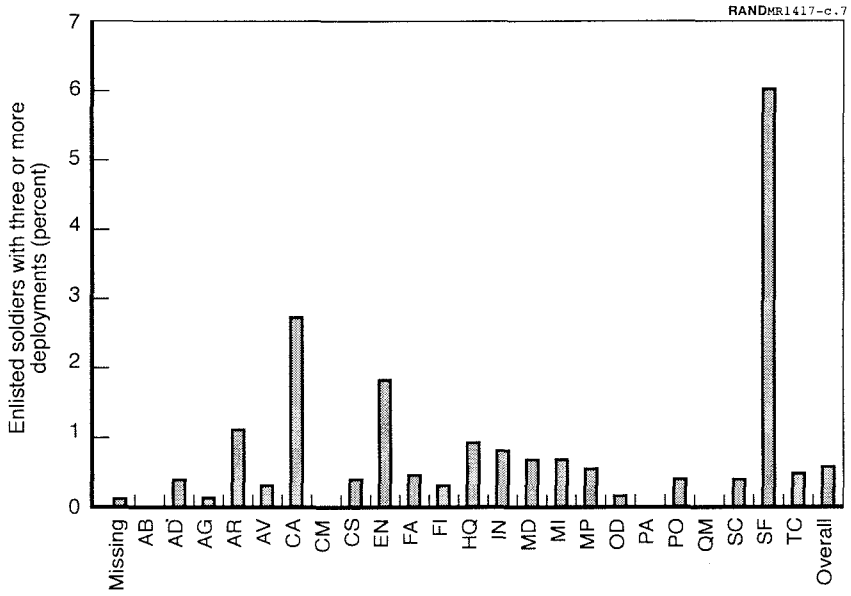

Figure C.7—Percentage of Enlisted Soldiers with Three or More Deployments

[7]Note, however, that Special Forces soldiers have volunteered for that specialty after several years experience in the Army. Presumably they recognize the frequency of deployments expected for such duty, and their expectations are likely to encompass much higher rates than soldiers in other categories.

On the other hand, the length of the deployments for the soldiers from European units appears to be shorter than for CONUS-based soldiers. For soldiers with two deployments, 55 percent of those stationed in Europe had a total of more than 180 days deployed during the three-year period, as compared with 72 percent of the CONUS-based soldiers. For those with three or more deployments, the corresponding figures were 51 percent of the European-based soldiers and 80 percent of the CONUS-based soldiers. These data indicate a mixed story with respect to whether the soldiers stationed in Europe are experiencing a greater burden from multiple deployments. Soldiers in Europe go on a disproportionate number of multiple deployments; however, they spend less total time away.

ISBN 0-8330-3067-1

MR-1417-A