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Army PERSTEMPO in the Post Cold War Era

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Preface

This document reports the results of an examination of available data on the rate at which military personnel are involved in military operations (PERSTEMPO). The research was conducted in early 1997 during the later stages of the Quadrennial Defense Review (QDR), specifically with respect to the Army. Information on data available is accurate as of this date; subsequently Congress has mandated changes. The work was sponsored by the Land Forces Division in the Office of the Director of Programs, Analysis and Evaluation to provide information for its QDR analyses. Because of the tight schedule imposed by the QDR, the research relied on readily available data sources.

The work was carried out in the Forces and Resources program of the National Defense Research Institute, a federally funded research and development center sponsored by the Office of the Secretary of Defense, the Joint Staff, the unified commands, and the defense agencies.

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Background

Since the end of the Cold War, the rate at which U.S. military forces have been participating in operations has increased. This increase has spurred concerns about the readiness and morale of the armed services. These concerns range from worries about near-term readiness of units to carry out their primary function to long-term concerns about retention. Policymakers attempting to grapple with these issues have been presented with a wide variety of largely anecdotal information about the effect of increased operations on individuals or specific units. Absent from the debate has been a set of commonly accepted definitions and good data. Without these, policymakers have had a difficult time crafting policy approaches or even determining the nature and extent of the problem.

This Study

This document reports on a short-term project carried out during the 1997 Quadrennial Defense Review (QDR). The project attempted to collect and assess available data for examining issues raised in the QDR. It focused on the largest of the military services, the Army, specifically its active component. It also concentrated on the rates at which people, rather than units, are involved in operations. Thus, the study examines so-called personnel tempo or PERSTEMPO, rather than operational tempo or deployment tempo (OPTEMPO and DEPTEMPO), which are related to but distinct from the personnel issue.[1]

The study took a three-pronged approach. First, we examined the terms and measures used to examine PERSTEMPO. A variety of both are in use, and these vary considerably. Second, we drew together existing data and measures and used them to describe activity levels from several perspectives. Third, we briefly addressed the potential impact of PERSTEMPO on key outcomes—readiness, quality of life, force structure—and the limitations of current impact measures.

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[1]Since 1997, Congress has mandated changes in the way the services manage PERSTEMPO and DEPTEMPO that have affected the data used to compile this document.

Several caveats deserve mention. First, we were unable to collect new data; thus we had to make do with what existed at the time. This leads to the second caveat: What existed varied considerably in content and quality. The issue of PERSTEMPO has become more important for the Army and the Air Force, and these services have begun to establish routine databases to quantify it. However, much of the data available for this study was created for other purposes. Third, institutional differences and the different operating procedures among the services make it difficult to assess the actual effect of varying levels of PERSTEMPO on individuals, particularly when attempting to draw conclusions across services. For example, a PERSTEMPO rate that might cause concern in one service might be viewed by another as routine. Finally, the scope of this study is limited to the active members of the Army. The reserve components are a critical part of current operations and are experiencing their own increases in PERSTEMPO as well, but we did not address this issue. These caveats should be remembered when reviewing the specific results.

Approach

We drew on a number of databases in an attempt to describe Army deployment PERSTEMPO from four aspects:

- historically compared with other services

- historically at the aggregate Army level

- by broad category (e.g., combat support)

- by individual skill.

By deployment PERSTEMPO, we mean the number of personnel deployed[2] divided by the total number of personnel at a given point in time. PERSTEMPO has been defined by a DoD working group to be any day away from home station.[3] However, data availability constrained us to look at deployments only,

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[2]What is included in deployments can differ across the databases we use for this work, and will be described separately for each one.

[3]To include anything more than one overnight away from home station (and family) on TDYs related to operations, including operational deployments, contingency operations, and off-station field training to support operational proficiency (e.g., NTC, RED FLAG). Administrative and school TDYs do not count. Individuals serving on tours designated as unaccompanied tours are counted as deployed, whether or not they have dependents or are married.

and to look at these deployments in terms of numbers of personnel deployed at a given point in time, rather than number of days deployed.[4]

For the cross-service comparison, we used the only database available to make such a comparison, the Defense Manpower Data Center's (DMDC) Proxy database, which employs a common metric (based on finance records) for all services and identifies those active service personnel who are away from home station. From these data, DMDC has estimated the percent who were deployed from December 1987 to June 1990 and from September 1991 to March 1995.

For the aggregate Army Cold War and post–Cold War comparison, we drew on two Army databases. The first is an Army Concepts Analysis Agency study on deployments during the Cold War, the *Force Employment Study*. To calculate a post–Cold War rate, we drew on data compiled by the Army Office of the Deputy Chief of Staff for Operations (ODCSOPS), which included total numbers of Army deployments each month from December 1989 to October 1996.

To determine what portion of Army activities deployments represent in the post–Cold War era, we used a set of data on Army post–Cold War deployments created by the Army Office of the Deputy Chief of Staff for Personnel (ODCSPER). It contained deployments from 1993 to 1996, bi-weekly, for enlisted personnel only.

To get an overview of Army deployment PERSTEMPO in the post–Cold War era by category, we looked at Army deployments by four broad categories—combat arms (CA), combat support (CS), combat service support (CSS), and health services (HS)—to determine which categories have the highest deployment rates and whether the same categories are stressed across time.

To measure deployments at the skill level, we used three databases. The Baseline Engagement Force (BEF) database provided information about Army deployments, by military occupational specialty (MOS), for seven snapshots in time from February 1991 to October 1994. The Army SKILLTEMPO database contained monthly reports on Army enlisted deployments for each MOS from mid-1995 to the present. The DMDC deployment file for Operation Uphold Democracy (Haiti) provided individual-level information for personnel deployed to this operation.

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[4]The Army SKILLTEMPO database does include data on number of days deployed as well as the number of personnel deployed, but those data only exist from mid-1995, and are deemed most reliable from early 1996.

All these databases have limitations of varying degrees, and they all differ in time period measured, metrics used, and definitions.

Results

Keeping in mind the caveats listed above, a review and analysis of the data shows the following:

• Limited and incomplete data available for the QDR implied that PERSTEMPO increased in all services after the end of the Cold War, and that the largest increase was in the Army and Air Force.

• Examination of two sets of Army data indicates a substantial increase in early post–Cold War deployment PERSTEMPO (1991 to 1996) of three times the rate during 1975–1989.

• The increase in deployments did not fall uniformly across the Army's force. In the broad categories, combat support bore the heaviest deployment burden. A relatively narrow segment of the skill groups experienced high PERSTEMPO. Some skill groups had much higher deployment PERSTEMPO than others did. Of those that were busy, some were called on consistently while others experienced high demand only for some operations.

• The data we examined indicate that during the 1993 to 1996 time period, an average of roughly 5.5 percent of the total active Army was deployed at a point in time. While about one in twenty was actually deployed, a larger portion of the force was engaged in deployment activities, including preparation for and recovery from deployment.

• Little data existed to facilitate an analysis of the effects of increased deployment PERSTEMPO. What data did exist either reflected no evidence of any significant effect or were ambiguous.

Observations

Our efforts to examine PERSTEMPO with available data and measures led us to several broad observations about further improvements to PERSTEMPO work. Since this research was completed, numerous changes have occurred that are not reflected in the observations that we made in 1997.

First, better data are needed to measure PERSTEMPO and quantify the effects. Measurement according to the DoD definition of PERSTEMPO requires individual data expressed in man-days, which tracks all of the operational

activities specified in the DoD definition. Each of the four databases used in this work lacked one or more of these elements.

Second, further effort would be needed to tie PERSTEMPO information to relevant outcomes. Some PERSTEMPO measures may have important implications for policymakers involved with quality of life concerns but may be of little interest to force-structure designers.

Third, any attempt at cross-service analysis of PERSTEMPO effects has to take into account the different roles, missions, and operating styles of the services.

Finally, some thought should be given to the longevity of PERSTEMPO effects and causes. Concerns over these effects and causes might be mitigated over the longer term as people adjust to new patterns of deployment. The effects of higher PERSTEMPO may have differed among services because people had different expectations based on different service operating styles. It is not inconceivable that those in the Army could develop a new set of expectations. To be sure, policy prescriptions may have to be applied to address quality of life and other issues.

Acknowledgments

Abbreviations

Term	Definition
AC/RC	Active component/reserve component
AHP	Away from Homeport (Navy)
BEF	Baseline Engagement Force (Joint Staff)
CAA	Concepts Analysis Agency (Army)
CALL	Center for Army Lessons Learned (Army)
CA	Combat Arms (Army)
CONUS	Continental United States
CS	Combat Support (Army)
CSS	Combat Service Support (Army)
DMDC	Defense Manpower Data Center
FES	*Force Employment Study* (Army CAA)
HS	Health Services
JUMPS	Joint Uniformed Military Pay System
MFO	Multinational Force and Observers
MOS	Military Occupational Specialty
MOOTW	Military Operations Other Than War
MP	Military Police
MTW	Major Theater War (replaces MRC, which is Major Regional Conflict)
ODCSOPS	Office of the Deputy Chief of Staff for Operations
ODCSPER	Office of the Deputy Chief of Staff for Personnel
ODS	Operation Desert Storm

OOTW	Operations Other Than War
PCS	Permanent Change of Station
PERSTEMPO	Personnel tempo
PWG	PERSTEMPO Working Group (OSD)
SIDPERS	Standard Installation/Division Personnel System
SF	Special Forces
SOC	Special Operations Command
SOF	Special Operations Forces
SORTS	Status of Resources and Training System (DoD)
SSC	Smaller-scale contingency
TAR	Turnaround ratio (Navy)
TDA	Table of Distribution and Allowances
TOE	Table of Organization and Equipment
TPFDD	Time Phased Force Deployment Data
TTHS	Trainees, Transients, Holdees, and Students (Army)
UIC	Unit Identification Code
UN	United Nations
USAREUR	U.S. Army, Europe

Definitions

Term	Definition
Contingency Operations	Military operations that go beyond the routine deployment of stationing of U.S. forces abroad but fall short of large-scale theater war. Such operations range from smaller-scale combat operations to peace operations and noncombatant evacuations (March 1996 *DoD Annual Report to the President*).
Contingency	An emergency involving military forces caused by natural disasters, terrorists, subversives, or by required military operations. Because of the uncertainty of the situation, contingencies require plans, rapid response, and special procedures to ensure the safety and readiness of personnel, installations, and equipment (Joint Pub 1-02).
Deployment (Army)	The relocation of forces and materiel to desired areas of operations; the movement of forces within areas of operations. Deployment encompasses all activities from origin or home station through destination. (Army Center for Lessons Learned on-line thesaurus: http://call.army.mil/call/thesaur/00001547.htm)
Deployment (DoD)	1. In naval usage, the change from a cruising approach or contact disposition to a disposition for battle. 2. The movement of forces within areas of operation. 3. The positioning of forces into a formation for battle. 4. The relocation of forces and materiel to desired areas of operations. Deployment encompasses all activities from origin or home station through destination, specifically including intracontinental United States, intertheater, and intratheater movement legs, staging, and holding areas. See also deployment order; deployment planning; deployment preparation order. (DoD Joint Pub 1-02, *Dictionary of Military and Associated Terms*, 23 March 1994).

Deployment (Marine Corps)	A unit deployed for ten or more consecutive days for operations/training away from home station (USMC Personnel Deployment Management Information Briefing, 22 August 1996).
DEPTEMPO (Army)	Percent of time spent on "out of station operational deployments" by unit. Deployments measured include operational, civil, humanitarian, counter-drug, major training exercises—OCONUS only, and UN Staff and Special Forces Team. Soldiers on a permanent overseas tour are not considered deployed (ODCSOPS per 26 July 1996 Briefing for the CSA on PERSTEMPO, DAPE-MPE).
DEPTEMPO (USMC)	The percentage of time in a given annual period that a unit or element of the unit, supports operations or training away from its home base or station for a period of ten or more consecutive days (POC-15, 2 January 1996, CMC Speech to AEI).
Humanitarian Assistance	Programs conducted to relieve or reduce the results of natural or manmade disasters or other endemic conditions such as human pain, disease, hunger, or privation that might present a serious threat to life or that can result in great damage to or loss of property. Humanitarian assistance provided by U.S. forces is limited in scope and duration. The assistance provided is designed to supplement or complement the efforts of the host nation civil authorities or agencies that may have the primary responsibility for providing humanitarian assistance (Joint Pub 1-02).

Multinational Force and Observers	An independent (non-UN) peacekeeping mission created as a result of the 1978 Camp David Accords and the 1979 Treaty of Peace. Since 1982, various nations have contributed military and civilian personnel to serve in Egypt's Sinai Peninsula as part of this highly successful organization. The ten currently participating states are Australia, Canada, Colombia, Fiji, France, Hungary, Italy, New Zealand, the United States, and Uruguay. Norway, while not a participating state, provides the MFO with four staff officers (http://www.iaw.on.ca/~awoolley/mfo.html).
National Military Strategy	Addresses the main dangers that threaten U.S. security interests, identifies the national military objectives, determines the military tasks needed to achieve these objectives, and examines the capabilities and forces required (*National Military Strategy*, JCS, 1995).
Operational Tempo (Army)	The annual operating miles or hours for the major equipment system in a battalion-level or equivalent organization. Used by commanders to forecast and allocate funds for fuel and repair parts for training events and programs (CALL website).
Operational TEMPO (Navy)	The number of days underway per quarter, when discussing the intensity of activity in the fleets (*OPTEMPO and Training Effectiveness*, Linda Cavalluzzo, Professional Paper 427, December 1984, Center for Naval Analyses).

Peace Enforcement	Peace enforcement is the application of military force, or the threat of its use, to compel compliance with resolutions or sanctions to maintain or restore international peace and security, or address breaches of the peace or acts of aggression. Such operations do not require the consent of involved states or of other parties to the conflict. These operations are authorized by the UNSC or a regional organization. They may be conducted by the United Nations, by a multinational coalition led by a member state or alliance, or by a regional organization (March 1996 *DoD Annual Report to the President*).
Peace Operations	Operations including peacekeeping and peace enforcement (March 1996 *DoD Annual Report to the President*).
Peacekeeping	Peacekeeping involves deployment of military and/or civilian personnel with the consent of all major belligerent parties in order to preserve or maintain the peace. Such operations are normally undertaken to monitor and facilitate implementation of an existing truce agreement and support diplomatic efforts to achieve a lasting political settlement (March 1996 *DoD Annual Report to the President*).
PERSTEMPO (Army)	(1) The pace and frequency of deployments and field exercises (*Army Times* July 7, 1995 article "Strains Seen in Enlisted Training, Rotations," Jim Tice).
	(2) The rate of station "deployments" for Army elements, measured as a percentage. PERSTEMPO consists of two components: DEPTEMPO and SKILLTEMPO (26 July 1996 Briefing for the CSA on PERSTEMPO, DAPE-MPE).

PERSTEMPO (DoD)   The amount of time service members spend away from their home station, subject to the following counting rules: Anything more than one night away from home station (and family) counts; maneuvers conducted at home station do not. Only TDYs related to operations are counted, including operational deployments, contingency operations, and off-station field training to support operational proficiency (e.g., NTC, RED FLAG). Administrative and school TDYs do not count. Individuals serving on tours designated as unaccompanied tours are counted as deployed, whether or not they have dependents or are married ((March 1996 *DoD Annual Report to the President*), PERSTEMPO Working Group, July 96 Report).

PERSTEMPO   The percentage of time in a given annual period that an
(Marine Corps)   individual supports operations or training away from his or her barracks, home base, or station for a period of time greater than 24 hours; to include unaccompanied FMF duty assignments and TAD. (USMC POC-15, 2 January 1996, CMC Speech to AEI).

PERSTEMPO   A comparison of a unit's days not in homeport over a
(Navy)   specific period of time, expressed as a time away from homeport. Underway from homeport with return on the same day is a day in homeport (Personnel tempo of operations OPNAV Instruction 3000.13B, *Personnel Tempo of Operations*, OP-642C2, 11 February 2000).

Readiness   The overall ability of forces to arrive on time where needed and prepared to effectively carry out assigned missions. . . . [Readiness is a] function of having the equipment, supplies, logistics, intelligence, and experienced people with the skills to accomplish assigned tasks (March 1996 *DoD Annual Report to the President*).

SKILLTEMPO (USA)	Percent of time spent on "out of station operational deployments" by MOS and skill level. Deployments measured include operational, civil, humanitarian, counter-drug, major training exercises—OCONUS only, and UN Staff and Special Forces Team. Soldiers on a permanent overseas tour are not considered deployed (ODCSPER per 26 July 1996 Briefing for the CSA on PERSTEMPO, DAPE-MPE).
Smaller-scale contingencies	Operations encompassing the full range of joint military operations beyond peacetime engagement activities but short of major theater warfare, including show-of-force operations, interventions, limited strikes, noncombatant evacuation operations, no-fly zone enforcement, peace enforcement, maritime sanctions enforcement, counterterrorism operations, peacekeeping, humanitarian assistance, and disaster relief (*Quadrennial Defense Review Report*, May 1997).
Turnaround Ratio (TAR)	The time between deployments divided by deployment length.

1. Introduction

Background

The pace of operations in the armed forces has increased considerably in the post–Cold War era, to the point where it is adversely affecting the readiness of units and the quality of life of military personnel. A string of reports have called attention to this issue, including the 1994 *Report of the Defense Science Board* (DSB) *Task Force on Readiness*[1] and the 1995 *Report of the DSB Task Force on Quality of Life*.[2] Concerns about what has come to be called personnel tempo, or PERSTEMPO, punctuate newspaper articles and DoD documents. The issue has also drawn the attention of Congress, where the Chairman of the House Committee on National Security issued a report that concludes that personnel tempo today reduces military readiness.[3] The concerns are that the current pace of operations is higher than can be sustained by today's force, much less by any smaller future force.

One obvious response would be to increase the force structure, particularly in selected skills and units, to meet these demands. Army Research, Development and Acquisition (RDA) activities in FY98 and FY99 were programmed at significantly less than the Army's desired annual steady state of $15 billion. Even with acquisition reform efficiencies, it is unlikely that sufficient funds will be available for modernization. Any move to increase Army force structure will conflict directly with the effort to modernize equipment.

The 1997 Quadrennial Defense Review (QDR) was charged with reassessing America's defense strategy, force structure, military modernization programs, and defense infrastructure for the future. In support of the QDR, RAND was asked by the Land Forces Division, Programs, Analysis and Evaluation (PAE/LFD) in the Office of the Secretary of Defense to determine what the existing data and measures can indicate about Army PERSTEMPO in the post–Cold War era.

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[1]Defense Science Board, *Report of the Defense Science Board Task Force on Readiness*, Office of the Under Secretary of Defense for Acquisition and Technology, Washington, D.C., June 1994.

[2]Defense Science Board, *Report of the Defense Science Board Task Force on Quality of Life*, Office of the Under Secretary of Defense for Acquisition and Technology, Washington, D.C., October 1995.

[3]Floyd D. Spence, Chairman of the House Committee on National Security, "Military Readiness 1997: Rhetoric and Reality," April 9, 1997, Washington, D.C.

Approach

We took a threefold approach. First, we examined the PERSTEMPO definitions and measures that existed at the time, both in the Army and across DoD. Many different terms and measures have been used to describe different aspects of PERSTEMPO, and these can vary widely in their estimates of "PERSTEMPO" rates.

Second, we compiled existing data, attempting to measure the Army's PERSTEMPO, both in comparison with other services and by skill. We also developed some of our own metrics. This effort focused on the active Army, although the other services and reserve components are also experiencing an increase in PERSTEMPO with their own unique problems and issues.

Ultimately, policymakers are interested in how PERSTEMPO rates affect key areas of national security. Is readiness degraded? Is the quality of life of service personnel in jeopardy? Are there implications for force structure? Unfortunately, little is known, and only more—and more complete—information and analysis will help answer these questions. With this in mind, we provide some examples of current indicators and their problems. Given the scale and duration of the QDR effort, we relied on existing data and analysis.

Report Organization

Chapter Two discusses existing definitions and measures of PERSTEMPO across the services and DoD.

Chapter Three presents some estimates of Army PERSTEMPO in comparison with other services and by skill.

Chapter Four briefly discusses measurement of the effect of current PERSTEMPO.

Chapter Five presents our results and conclusions.

2. Defining and Measuring PERSTEMPO

This chapter accomplishes two things. First, it describes some of the shortcomings of defining and measuring PERSTEMPO that existed at the time of the QDR. Our analysis of the problems of quantifying PERSTEMPO shaped our approach to the problem. Second, it presents the approach we used to measure the Army's PERSTEMPO.

Problems with Measuring PERSTEMPO

The difficulty of measuring PERSTEMPO at the time of the QDR stemmed from several causes: lack of a consistent and well-developed set of definitions, lack of adequate data, and an absence of a consistent and well-defined framework for relating the measures to policy questions.

Definition Problems

A variety of terms relate to the PERSTEMPO of U.S. military forces. We found that these terms are not well understood, and their definitions and associated measures were evolving as the roles and missions of U.S. forces in the post–Cold War era evolve. The PERSTEMPO Working Group (PWG)[4] was charged in July 1994[5] with defining PERSTEMPO, identifying PERSTEMPO criteria and standards for each service, and determining what measurement and reporting systems currently exist. The final report of the PWG defined PERSTEMPO as any day away from home station (U.S. Department of Defense, 1996). The day-away definition includes any time away from home station (and family) of one night or more that is related to operations, including unaccompanied tours, operational deployments, contingency operations, and off-station field training to support operational proficiency (e.g., National Training Center, RED FLAG). Those serving on tours designated as unaccompanied are counted whether or not they are married or have dependents. The PWG also recommended having the services provide PERSTEMPO data to the Defense Manpower Data Center

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[4]The PWG was directed by the Joint Staff in coordination with OSD and the services.

[5]The PWG was initiated in July 1994 at the request of OSD, and formally tasked by the Deputy Secretary of Defense in his 27 October 1994 Program Decision Memorandum II (PDM II).

(DMDC). These recommendations were just being implemented at the time of this study.

Three other terms relate to PERSTEMPO. All services use OPTEMPO (operational tempo), which characterizes such activity as training and operational deployments. The Army and Marine Corps use DEPTEMPO (deployment tempo) to describe the time a unit spends away from station on operational deployments. Finally, SKILLTEMPO (skill tempo) is an Army term that describes the operational tempo of skill groups or Military Occupational Specialties (MOSs).

Each term and its associated measures capture a different aspect of unit or personnel activity. Each relates to different areas of policy interest, such as readiness, force structure, or quality of life. And depending on the area of policy interest, some terms (and associated measures) are more appropriate than others.

For example, OPTEMPO is more relevant to the policy area of readiness. The term has been used by all services for years in a budget context, referring to such things as annual tank miles for the Army, steaming days for the Navy, and flight hours for the Air Force. The Army defines OPTEMPO as "annual operating miles or hours for the major equipment system in a battalion-level or equivalent organization. Commanders use OPTEMPO to forecast and allocate funds for fuel and repair parts for training events and programs."[6] It relates to PERSTEMPO in the obvious sense that military personnel are responsible for operating these systems. Before U.S. involvement in contingency operations increased, high OPTEMPO was seen as a positive contribution to readiness because it related almost exclusively to training activities.

But the nuances surrounding the term are evolving. As contingency operations have increased, OPTEMPO (both training and operations) has taken on a more generic meaning as an overall indicator of activity, and today high OPTEMPO is sometimes thought to be associated with an adverse effect on readiness.[7]

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[6]From the Center for Army Lessons Learned (CALL) website thesaurus http://call.army.mil/call/thesaur/index.htm, last updated 11 August 1997, last accessed 10 September 1997.

[7]See Floyd D. Spence, *Military Readiness 1997: Rhetoric and Reality*, 9 April 1997, Washington, D.C., who states " . . . the reality of undermanning, personnel turbulence and turnover, reduced experience levels, and a high operations and personnel tempo instead has resulted in reduced military readiness."

Services Define and Measure PERSTEMPO Differently

Traditionally, PERSTEMPO was defined and measured differently by each of the services.[8] Their preferred measures reflected differences in their roles and functions (e.g., air, land, and sea capabilities), in their operations (e.g., forward presence versus forward stationing), and in how they move their forces (e.g., as large or small groups or as individuals). However, in 1997 PERSTEMPO data largely reflected what the services had available to them for other purposes.

Figure 2.1 describes how each service defined PERSTEMPO at the time of this study in terms of (a) the duration of deployment or activity, and (b) the activities included in deployment.[9] These definitions were formulated before implementation of the DoD definition as any day away from home station. Service measures associated with these definitions also differed in other ways, such as what was measured—units, individuals, skill groups, or others. However, the debate on how to define and measure PERSTEMPO centered on what activities of what duration to include in the numerator.

Army PERSTEMPO measures traditionally included deployments of more than seven days, to include operational, civil, humanitarian, counter-drug, and major

	Army	**Navy**	**Air Force**	**USMC**
Activity Duration	≥ 7 days	≥ 56 days	≥ 1 day overnight	≥ 10 days
Activities Included	AND operations exercises	AND fwd presence operations	AND unit trng exercises operations mil-to-mil indiv trng/educ admin TDY	AND fwd presence unit trng exercises operations

Figure 2.1.—What Services Count When Measuring PERSTEMPO

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[8]In addition to differences across the services (and across DoD), PERSTEMPO measures could also differ within a service. Fewer differences exist within the Navy, which had well-established measures since the mid-1980s. More variation existed within the Army and Air Force, for whom the need to track and analyze PERSTEMPO was relatively recent, still evolving, and 'less homogeneous' than in the Navy.

[9]Time dimensions (activity duration) of this table are from the Report of the PERSTEMPO Working Group, July 12, 1996, Washington, D.C. Activities included in the different service PERSTEMPO measures were derived from discussions with each of the services. Subsequent to this research, the Army began including deployments lasting less than seven days.

OCONUS training exercises, as well as U.N. Staff and Special Forces Teams. Prior to the adoption of the DoD measure of any day away in November 1996, the Army did not include what were considered to be routine duties, such as unit training, individual training and education, administrative TDY, or forward stationing (the unaccompanied tour portion of which would be included in the DoD PERSTEMPO definition). In response to the PWG recommendation, it began to include routine off-post training activities.

Navy PERSTEMPO measures included any deployment of longer than 56 days, such as forward presence deployments and deployments to contingency operations that are 56 days or longer. For ships, it essentially meant any time a ship is out of port, other than during sea trials or other short exercises.

The Air Force, reflecting how its forces operate, has tended to include most activities of at least one day duration in its PERSTEMPO measures. Not included was forward stationing.

Finally, the Marine Corps has included in its measures deployments of longer than ten days, including unit training, exercises, and operations.

These service definitions and measures have changed over time, with ongoing policy changes to respond to the Secretary of Defense's direction that PERSTEMPO be defined as any day away from home station, regardless of the activity.

Data Problems

For the QDR, there was little data for measuring PERSTEMPO. Existing service and DoD databases were not established to determine how busy units are or how often individuals deploy.[10] As a result of data shortcomings, analysts attempting to measure PERSTEMPO either had to adapt existing data—often substantially manipulating them—or collect new data. Table 2.1 describes the major PERSTEMPO database efforts used for our work.

The DMDC proxy PERSTEMPO database marks one of the first efforts to provide a cross-service analytical database that could be used to examine PERSTEMPO issues. Its goal is to include personnel "away from home station" consistent with

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[10]Interest in PERSTEMPO has been relatively recent by all services except the Navy, which first addressed this issue in 1985.

Table 2.1

Major PERSTEMPO Databases Used in This Work

Database Name	How data are reported	Time frame covered	Components included	Activities Tracked
DMDC Proxy PERSTEMPO Database	by individual	quarterly or monthly, 1987–present	active only	"away from home station" > 30 days
Baseline Engagement Force (BEF)	by MOS; to limited extent, by unit	7 points in time: Feb 91, Oct 94, Jul 92, Jul 93, Jul 94, Jul 95, Jul 96	all components	committed (all yrs), sustaining, remaining (1996 only)
Army SKILLTEMPO	by MOS, enlisted only	monthly averages since 1995	active enlisted only	deployments
DMDC Operations Files[11]	by individual	specific operation	all components	deployments to specific operation only

the DoD definition of PERSTEMPO previously described. The database is derived from pay records making a number of assumptions that are described briefly below.

To create a time-series PERSTEMPO database beginning in 1987, DMDC used pay records from the Joint Uniformed Military Pay System (JUMPS). DMDC identified individuals deployed based on the receipt of Hazardous Duty Pay or Family Separation Allowances (FSA) Type I and Type II. Since only members with dependents receive FSA, DMDC developed a rule for imputing deployment to members without dependents. All members of a unit were considered away from home station if (1) the unit had ten or more people, *and* (2) 30 percent or more of the unit members were married, *and* (3) 60 percent or more of the married people in the unit were receiving any FSA.

The underlying data and accompanying assumptions—which were the same for all services—resulted in better estimates for some services than others did. Research by the Center for Naval Analyses has concluded that the database fairly

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[11]Files exist for Operation Desert Storm (Gulf War), Operation Uphold Democracy (Haiti), and Operation Joint Endeavor (Bosnia).

represents its PERSTEMPO (Cavalluzzo and Reese, 1995). On the other hand, Air Force and Marine Corps analysts have compared the DMDC proxy PERSTEMPO estimates with their own service data and determined that the DMDC proxy PERSTEMPO database underestimates the PERSTEMPO rates of those services.[12]

The BEF Assessment was developed in late 1996 and early 1997 to support the QDR. This ambitious effort attempted to gain insights from historical snapshots into the effort required to execute and sustain current operations as well as overseas rotational and forward-based presence.[13]

For the BEF, the Joint Staff requested that the services provide data on the number of personnel in each of several defined deployment states. The data are arrayed by occupation for seven snapshots—July 1992, July 1993, July 1994, July 1995, July 1996, February 1991, and October 1994. The latter two were selected because they represent peak times of activity. Actual data received from the services varied somewhat from these times depending on availability. The Air Force, for instance, provided data for September (1992–1996) rather than for July.

The data requested were for three BEF categories: committed forces, sustaining forces, and remaining forces. The committed category includes those forces engaged in current operations, based forward, used in rotations such as the MFO Sinai, and engaged in certain other deployments. The sustaining category includes forces preparing for or reconstituting from deployments as well as forces engaged in direct support. The remaining category includes strategic forces, Major Regional Contingency (MRC) forces not previously accounted for, Trainees, Transients, Holdees, and Students (TTHS), and some other service-unique forces.[14] These data were compiled from multiple sources and by using multiple methods of collection; their accuracy cannot be easily determined, and probably varies. BEF data on deployments[15] and TTHS were derived from individual personnel records.

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[12]Air Force underrepresentation can be attributed at least in part to the duration of their deployments, many of which are less than 30 days. A key factor in Marine Corps underrepresentation is that the Corps has a higher proportion of single personnel than the other services, and the current DMDC assumptions do not vary across the services. One Marine Corps officer estimated that if one assumption was relaxed from 30 percent of the unit members married to 22 percent, the DMDC estimates would more closely approximate Marine Corps deployments.

[13] This is the purpose of the BEF, as stated in the 16 October 1996 Memorandum that describes the BEF effort (which at the time of the Memo was called the NOW Regional Contingencies Assessment).

[14]From the Joint Staff Memo of 16 October 1996 which outlines the BEF Assessment (previously referred to as the NOW Regional Contingency or NOW-RC Assessment).

[15]BEF deployment data are derived from Army SIDPERS data, which are estimated by the Army to be not very accurate for February 1991 (ODS), 78 percent to 80 percent accurate for July 1992 and July 1993, and 89 percent to 90 percent accurate for July 1994 through July 1996.

The Army SKILLTEMPO database contained monthly reports on Army enlisted personnel deployed for each MOS from mid-1995 forward (although data beginning in 1996 are considered most reliable). Deployments included operational, civil, humanitarian, counter-drug, major training exercises outside the Continental United States (OCONUS), and UN Staff and Special Forces Teams. Standard Installation/Division Personnel System (SIDPERS) transaction records obtained directly from the field provided deployment and training data for individual soldiers.[16] Changes to the SIDPERS transactions record were made in the early 1990s to include deployment information. These changes made it possible to use these records for tracking PERSTEMPO by skill group (SKILLTEMPO).

SKILLTEMPO data took the form of monthly reports. For each MOS, the number of man-days deployed and the number of personnel deployed at any time during the month were provided, as well as the total MOS population and the deployable population. Note that the SKILLTEMPO database definition of "deployable" excluded only TTHS and Army forces stationed in Korea as undeployable.

Finally, DMDC has created deployment files for three operations: Operation Desert Storm (Gulf War), Operation Uphold Democracy (Haiti), and Operation Joint Endeavor (Bosnia), which provide individual-level information for all components of all services for those personnel deployed to these three operations. These deployment files are separate from the DMDC proxy PERSTEMPO database. Deployments to other activities during the same timeframe are not included.

In addition to these major databases, the work in this document used two additional databases compiled by the Army for special projects. These databases provide the longitudinal data needed to track Army PERSTEMPO across the post–Cold War period, but provide only aggregate data. Breakdowns by unit, skill group (MOS), individual, or any other aggregation are not provided.

The Office of the Deputy Chief of Staff for Operations (ODCSOPS) created a spreadsheet database of major deployments and major training exercises from December 1989 to October 1996. Those monthly data were compiled from multiple sources and they account for deployments to 45 different operations.[17]

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[16]These individual transaction records are generated whenever an individual deploys. Deployments are now being expanded to include off-post training to comply with the DoD direction that PERSTEMPO include any day away from home station. These transactions are ultimately used to update individual records in the Army Personnel Database.

[17]The operations include MFO, JTF Bravo, JUST CAUSE, JTF-FULL ACCOUNTING, COUNTER DRUG operations, SHARP EDGE, DESERT SHIELD/STORM, PROVIDE COMFORT, SEA ANGEL,

10

The originator of the ODCSOPS database indicated that the database does not capture all of the smaller operational deployments, but it does cover deployments from OCONUS and all types of units.

The Office of the Deputy Chief of Staff for Personnel (ODCSPER) compiled a set of biweekly data on the number of Army enlisted personnel deployed from 1993 to 1996. Deployments tracked in the ODCSPER data include operational, civil, humanitarian, counter-drug, major OCONUS training exercises, and U.N. Staff and Special Forces. These data were derived from individual personnel records.

The databases that we have outlined here fell short of the requirements set forth by the DoD PERSTEMPO definition in two ways. They failed to account for all of the operational activities specified by the DoD definition and the data were typically provided in terms of numbers of personnel, rather than days away on operational deployments. Regarding this latter point, only one of the databases used for this work provided data on days deployed (as opposed to numbers of people deployed). The lack of data on days away or days deployed meant that expressions of PERSTEMPO rates—including those provided in this document, unless otherwise indicated—were often in terms of personnel deployed rather than days deployed, as the DoD definition would dictate.

Measuring Army PERSTEMPO Rates

Figure 2.2 presents a generic formula for measuring Army PERSTEMPO rates. This formula contains four aspects of a PERSTEMPO measure:

- what is being measured—an individual, an MOS, a service

- the numerator—which activities of what duration

- the denominator—the total or deployable population

- units of measure—monthly or annual, totals or averages, man-days or personnel.

DESERT FALCON, JTF QUICKLIFT, JTF GITMO, PROVIDE HOPE, PROVIDE PROMISE, DENY FLIGHT, PROVIDE TRANSIT, HURRICANE ANDREW, PROVIDE RELIEF, HURRICANE INIKI, RESTORE HOPE, UNOSOM II, JTF PROVIDE REFUGE, PATRIOT DEPLOYMENT (SA), DENY FLIGHT/DELIBERATE FORCE, ABLE SENTRY, PATRIOT DEPLOYMENT (ROK), SEA SIGNAL, SUPPORT HOPE, CARICOM TRAIN-UP, SAFE HAVEN, UPHOLD DEMOCRACY, UNMIH, VIGILANT WARRIOR, DISTANT HAVEN, SAFE PASSAGE, SAFE BORDER, FAIRWINDS (Haiti), PROMPT RETURN, VIGILANT SENTINEL, HURRICANE MARILYN, JOINT ENDEAVOR, ASSURED RESPONSE, JUNGLE WARRIOR, KUWAIT DEPLOYMENT, PACIFIC HAVEN.

Days away due to:

$$
\text{PERSTEMPO} = \frac{A \begin{cases} \bullet \text{ Individual training} \\ \bullet \text{ TDY, PCS} \\ \bullet \text{ Forward stationing} \\ \bullet \text{ Exercises} \\ \bullet \text{ Operations} \\ \bullet \text{ Other deployments} \\ \bullet \text{ Military-to-military contacts} \end{cases}}{B \begin{cases} \bullet \text{ Total population} \\ \bullet \text{ Deployable population} \\ \bullet \text{ Deployed populations} \end{cases}}
$$

- Individual
- Skill
- Unit
- Force
- Service
- Category
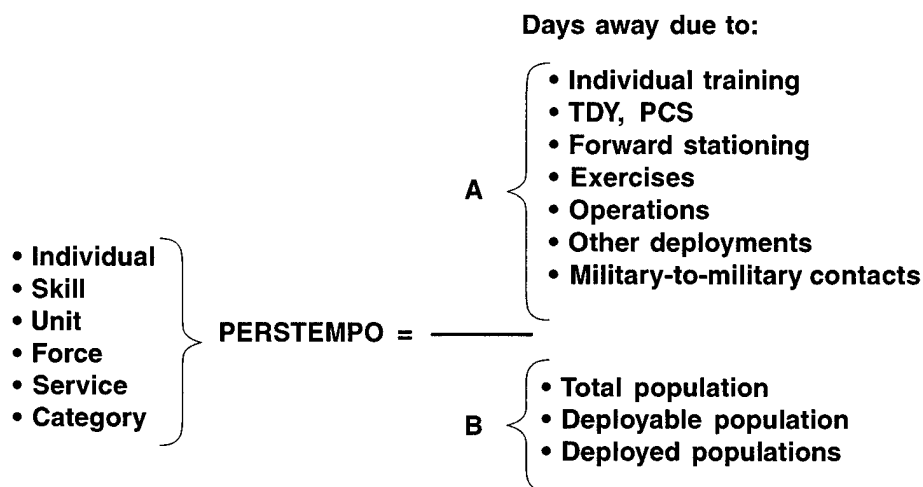
Metrics: people, man-days, sorties, flying hours, etc.

Figure 2.2—Components of a PERSTEMPO Rate Measure

Population Considered

The first issue is whose PERSTEMPO is being measured. Is it the PERSTEMPO of the whole Army? Of a certain skill group or MOS? The Army has focused a great deal of effort on measuring PERSTEMPO of skill groups and has recently implemented PERSTEMPO rate measures for units (DEPTEMPO). Note that the appropriate measure will vary according to the policy area of interest. For instance, if retention and quality-of-life issues are of interest, then typically the PERSTEMPO of individuals over an extended period of time or over a career becomes the focus.[18] For deployments, the Army has typically included only deployments longer than seven days,[19] although it is implementing the DoD definition to include any day away from home station.

Activities Counted in the Numerator

The numerator varies according to what activities are counted in the calculation of days away. To demonstrate the effects of differences in the numerator measures, we compare four definitions of PERSTEMPO rates for active Army personnel in July 1996 (See Figure 2.3). Three of these definitions are measurable

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[18]Hosek and Totten (1998) have measured PERSTEMPO over time using the DMDC data.

[19]The Navy has typically included deployments of greater than 56 days; the Air Force has included any deployment that is at least one night away from home station; the USMC has included deployments of greater than ten days.
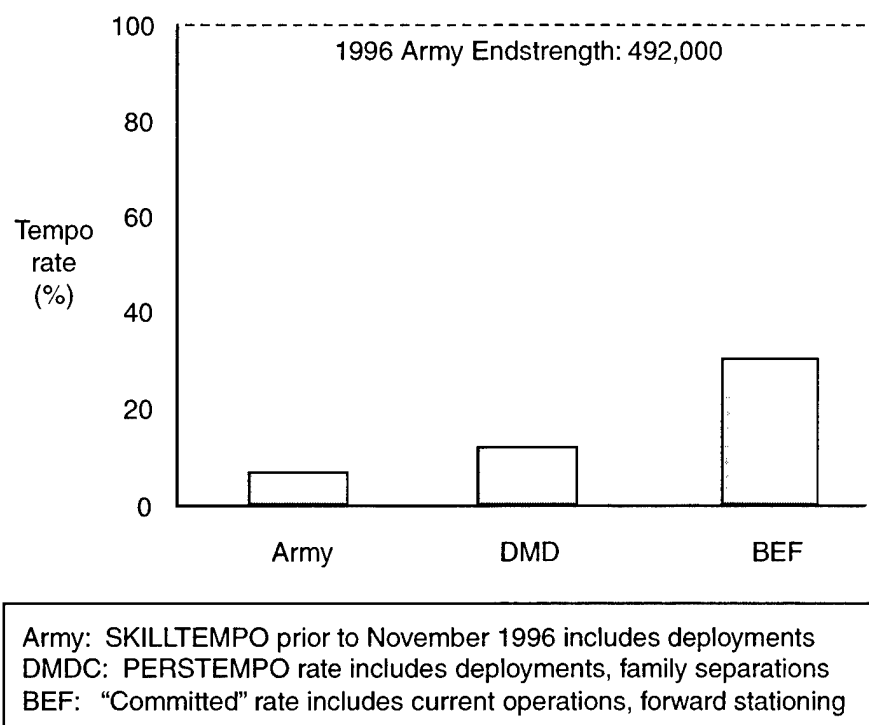
Figure 2.3—PERSTEMPO Rates Using Different PERSTEMPO Definitions
Army Example from July 1996

using databases described above: the Army SKILLTEMPO database, the DMDC proxy PERSTEMPO database, and the BEF. For the fourth definition, any day away from home station, data do not yet exist. We hold constant the denominators (active Army strength as of the end of the fiscal year), the measurement units of those activities (all are expressed in terms of number of service members affected in a month), the time frame (July 1996), and what is being measured (aggregate active Army PERSTEMPO).

The three estimates of Army TEMPO in Figure 2.3 range from over 6 percent to 30 percent. The Army SKILLTEMPO rate, which includes only deployments (of 27,739 enlisted and roughly 5,500 officers)[20], is 6.5 percent. The DMDC proxy PERSTEMPO rate includes deployments and other activities for which hostile fire pay, family separation pay, or both is paid.[21] That resulting PERSTEMPO rate of 12 percent almost doubles the SKILLTEMPO rate. The BEF "committed"

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[20]The SKILTEMPO database does not include officers. A proportional number of officers were added here to make the comparisons more consistent.

[21]We do not have the underlying DMDC data, and use as a proxy for family separations unaccompanied tours that we estimate to be about 26,000 for the Army in July 1996.

rate includes current operational deployments[22] and all personnel forward stationed, irrespective of family separation. The resulting rate of 30 percent is more than four times the SKILLTEMPO rate that only includes deployments.

Finally, the DoD definition of any day away from home would exclude some of the forward stationing that is counted in the BEF; the DoD measure would include only unaccompanied tours. But the definition adds in all training that would take a service member away from home station overnight. If, as seems plausible for the Army, days away from home station for training exceed days away from home station on unaccompanied foreign tours, this rate would exceed the BEF rate.

Definition of the Denominator

PERSTEMPO measures most often used refer to "totals" (e.g., total Army personnel or man-days) and "deployables" (deployable Army personnel or man-days). "Deployables" can have numerous interpretations. Army "deployable personnel" might exclude the TTHS category, personnel assigned to the Table of Distribution and Allowances (TDA) Army, units stationed in Korea, personnel who cannot deploy for medical or other reasons, or units forward stationed anywhere. Also, an "as of" date must be chosen, which will determine whether it is a daily, weekly, monthly or annual rate.

The difference among these choices is considerable. For example, for October 1996, total active Army endstrength was 490,996. Deployable personnel as defined by the Army's SKILLTEMPO database (excluding TTHS and Korea) were 394,849. A second interpretation of deployable personnel (which excludes TTHS, Korea, TDA, and the 5 percent of Army personnel who are undeployable at any given point in time for medical or personal reasons) yields only 248,973, or only half of the total Army figure of 490,996.

Unit of Measure

There are a number of dimensions to the measurement units for PERSTEMPO. First, the units of measure could be man-days, people, sorties, and so forth. These measures tend to be service specific, and the Army's SKILLTEMPO database uses both total number of man-days and total number of personnel. A second dimension of the unit of measure is time frame. Some data are for one point in time; other data are for a month or a year. The Army SKILLTEMPO

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[22]This includes rotational deployments such as MFO Sinai.

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database, for instance, provides monthly data. Historical data, prior to the past several years, often record activity over a whole year. Recent efforts try to track PERSTEMPO data monthly.[23] Finally, the units of measure can be averages or totals. Averages can mask the effects on individuals. For example, only 15 percent of an Army skill group might be deployed on average in a given month, but typically those who are deployed are deployed for 100 percent of the month.

How would the generic formula measure PERSTEMPO according to the DoD definition? Some aspects of the formula are specified by the DoD PERSTEMPO definition; others are not. That definition indicates measurement of the amount of time service members spend away from their home station on TDYs related to operations, including operational deployments, contingency operations, off-station field training to support operational proficiency, and unaccompanied tours. According to the four dimensions of the formula we have specified previously, this would suggest that we are interested in measuring *individual* PERSTEMPO[24] in terms of *man-days*. The numerator would include operations, other deployments, unaccompanied tours, and off-station field training to support operational proficiency (e.g., NTC, RED FLAG). The DoD definition does not specify a denominator.

Because of the shortcomings in data that we have already discussed, we could not measure Army PERSTEMPO according to the DoD definition. Each of the four databases we examined lacks either data expressed in man-days over a period of time (most are expressed in terms of number of personnel at a point in time), individual level data, or one or more of the activities specified in the numerator.[25]

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[23]Hosek and Totten (1998) have used the DMDC database to compare point-in-time PERSTEMPO with PERSTEMPO measured over time (two years prior to the first-term retention decision). The latter is three to five times the former.

[24]Individual level data can obviously be aggregated up into any of these other groupings (e.g., skill, unit, component, service).

[25]See Table 2.1 above and subsequent discussion for what is included in each of these databases.

3. Army PERSTEMPO in the Post–Cold War Era

Chapter Two described the four principal databases that provide snapshots of Army PERSTEMPO in the post–Cold War era: the DMDC proxy PERSTEMPO database, the BEF, the Army SKILLTEMPO database, and the DMDC Operations file for Operation Uphold Democracy. This chapter provides measures from the first three databases on Army deployment PERSTEMPO. As previously described, deployment PERSTEMPO is defined as the number of personnel deployed divided by the total number of personnel at a given point in time.[26] Data availability constrained us to look at deployments only, and to consider these deployments in terms of numbers of personnel at a given point in time, rather than number of days deployed.[27]

First, we show data that compare Army PERSTEMPO with that of the other services. We use the DMDC proxy PERSTEMPO database, the only database that has PERSTEMPO information for all four services. Second, we examine aggregate PERSTEMPO for the entire active Army over time to determine the extent to which the perceived increase in Army PERSTEMPO in the post–Cold War is real. We draw Army data from several sources to paint this retrospective picture. Third, we determine what portion of total Army activities the Army post–Cold War PERSTEMPO rates represent. Fourth, we estimate Army PERSTEMPO by category. For this estimate, we use the Joint Staff's BEF and the Army's SKILLTEMPO database. We describe how we calculated the rate and the rate itself for each dimension. As we discussed in Chapter Two, all data sets have significant limits. Therefore, data in this chapter should not be construed as the "right" set of measures for force structure; they were simply what was available at the time of the QDR.

Army PERSTEMPO Relative to the Other Services

We were charged with comparing PERSTEMPO across the services, a difficult task for at least two reasons. The first obstacle is lack of a consistent set of data

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[26]What is included in deployments differs across the databases we use in this section, and will be described separately for each database.

[27]One exception to this latter point is the Army SKILLTEMPO database, which includes data on number of days deployed as well as the number of personnel deployed.

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across services and across time. The only existing database that contains data for all services across time is the DMDC proxy PERSTEMPO database, which, like all other PERSTEMPO databases, has its own set of measurement problems.[28]

But problems with cross-service PERSTEMPO comparisons extend beyond data issues. The DMDC proxy PERSTEMPO database provides estimates of the number of personnel who are away from home station on long or hazardous duty for at least part of the month for each service. As we described in Chapter Two, these data are derived from pay records and tend to estimate PERSTEMPO rates for some services better than for others.

Figure 3.1 shows estimates calculated from the DMDC database of the average percentage of active service personnel who were away from home at a point in time from December 1987 to June 1990, as compared with service PERSTEMPO rates from September 1991 to March 1995.[29]

The numerator is an estimate of the average number of active personnel who were away from home station, derived from pay records and the assumptions described in Chapter Two. The denominator is the total number of active personnel in each service at the date of measurement. The unit of measure is the percentage of personnel away from home station in each month, averaged over the time periods shown.

Figure 3.1 shows that all services have experienced an increase in PERSTEMPO as measured by the DMDC proxy PERSTEMPO data. Further conclusions are difficult to draw, given that Air Force and Marine Corps estimates have been compared by those services with their own data and have been determined to underestimate the PERSTEMPO rates of those services. However, two other recent studies reach a similar overall conclusion. Using other sources, the General Accounting Office (GAO, 1995) also found that percentage increases in PERSTEMPO in the post–Cold War era are greatest for the Air Force and Army. Using additional measures and new imputation methods, Hosek and Totten (forthcoming) also determined from the DMDC records that all services experienced increased PERSTEMPO in the 1990s.

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[28]As discussed in Chapter Two, the DMDC proxy PERSTEMPO database is more accurate for some services than for others, but tends to underestimate deployments for all services. FSA misses shorter Air Force deployments (of less than 30 days); these deployments are especially important in the Air Force. The method used to impute deployment rates tends to underestimate, especially for the Marine Corps (Hosek and Totten, forthcoming). A review of how well the database tracks Navy PERSTEMPO is provided in Cavalluzzo and Reese, 1995.

[29]We have factored out deployments during ODS.
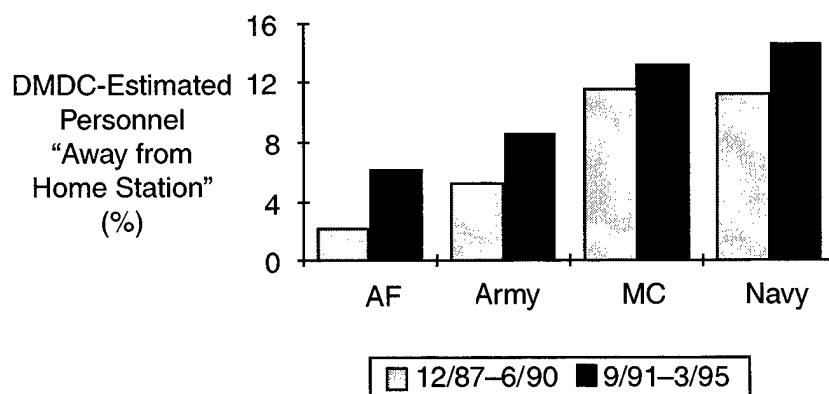
Figure 3.1—Cross-service PERSTEMPO Comparison

Aggregate Army PERSTEMPO over Time

To compile PERSTEMPO data for the active Army in aggregate,[30] we used two databases: one for 1975–1989 and the second for 1992–1996. The two differ somewhat in their definitions of deployment. We describe what is included in each below.

First, we looked at whether Army deployment activity increased since the 1975–1989 period and by how much. Second, we looked at how much of total Army activities those deployment activities represented in the 1992–1996 era.

Estimating Army 1975–1989 PERSTEMPO

For our analysis of Army deployments for 1975–1989, we use the Army Concepts Analysis Agency (CAA) *Force Employment Study* (FES), which provides an assessment of the employment of U.S. Army forces from 1975 to 1990 (Headen and Wilson, 1991). The goal of the FES was to create a historical database that would enable examination of the demand for Army participation in a wide range of missions. That unclassified database includes deployment operations of 50 or more soldiers, but excludes special operations and Army intelligence forces. Nor does it count deployments from OCONUS (specifically Europe, Japan, or Korea). FES used as its sources after-action reports and other documents on these operations.

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[30]The value of such aggregate measures can be debated. Shortfalls of such measures include that they mask variations in deployments by skill, unit, geographic region , and individual.

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Table 3.1 shows the data from the FES. Over the 15-year period from 1975 to 1989, 96,325 active-duty Army personnel participated in 49 operations. Those personnel spent a total of 8,347,333 man-days on those operations, averaging 87 days deployed per person. To calculate an annual average number of active Army personnel deployed on operations from 1975 to 1989, we divided the total number of people participating in operations for the entire period by 15 years. We calculated that during the Cold War the FES data show an annual average of 6422 personnel deployed during that period. These estimates of average deployments of active personnel underestimate actual deployments as described in Chapter Two.

Table 3.1

U.S. Active Army Deployments, 1975–1989 (FES)

Type of Operation	# Operations	# Active Personnel	# Active Man-days	Average Man-days Per Person
Disaster assistance	18	13,628	366,472	27
Refugee resettlement	5	12,603	1,250,444	99
Support to law enforcement	4	1,980	252,511	128
Nation-building	7	18,486	1,396,659	76
Security augmentation	6	7,077	914,909	129
Humanitarian assistance	4	5,976	793,359	133
Combat operations	3	17,415	516,024	30
Peacekeeping operations	1	15,991	2,812,589	176
Show of force	1	3,169	44,366	14
TOTAL	49	96,325	8,347,333	87

Estimating Army 1991–1996 PERSTEMPO

To calculate a rate for the 1991–1996 period, we drew on the data compiled by the Army Office of the Deputy Chief of Staff for Operations (ODCSOPS).[31] As we described in Chapter Two, those data provide monthly counts of the number of active Army personnel deployed from December 1989 to October 1996.

We calculated an average number of active Army personnel deployed over the post–Cold War era that we compared with the Cold War estimate just derived. Because we had monthly data, we calculated a monthly average PERSTEMPO over the 1991–1996 time frame. This calculation and the form of the underlying data (which are monthly for this database) differed from the Cold War calculation and data, but this was the closest we could get.

The deployment data compiled by Army ODCSOPS are shown in Figure 3.2. For the June 1991–September 1996 time period, the average number of Army personnel on operational deployments *in a month* is 12,911 or about double the FES Cold War average number of personnel deployed *in a year* (6422). The average number of Army personnel deployed each month to operations during the time shown varied from a low of about 2500 in early 1992 to a high of over 35,000 in late 1994.
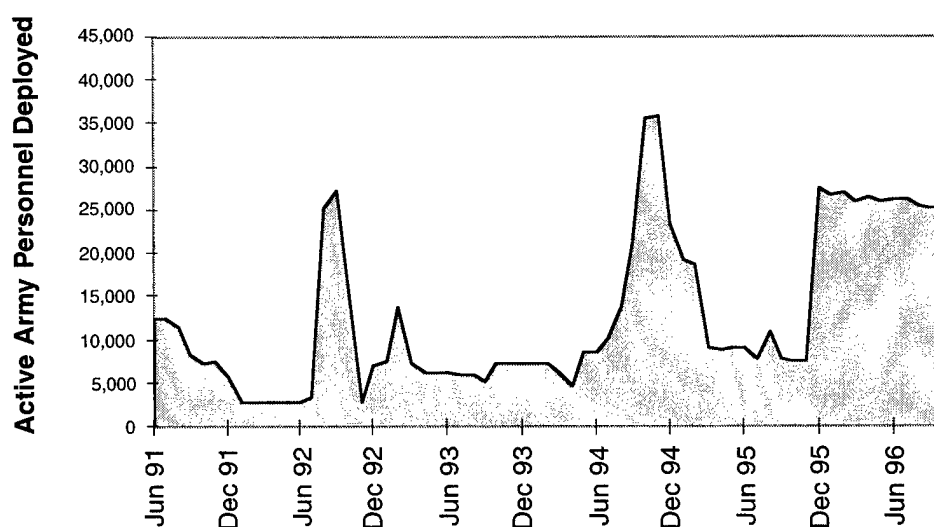
Figure 3.2—Active Army Deployments, 1991–1996

[31]In addition to the deployment data shown, the ODCSOPS spreadsheet database also provides data on major training exercises for 1989 to 1996. For a view of the full set of ODCSOPS data, which include major training exercises, see Appendix B.

Comparing Army PERSTEMPO Rates

As mentioned earlier, comparing the deployment activities of the two periods is problematic. Methods of compiling PERSTEMPO data have changed over time and continue to evolve. Few PERSTEMPO activities have been tracked historically, and how those data have been tracked has changed. In particular, one significant difference is the units of measure. The CAA FES reported the number of personnel deployed in each year for major operations based on the records of the operations. The ODCSOPS database reported monthly totals from multiple sources. However, they were compiled in similar ways and provide the most consistent comparison.

Keeping these shortcomings in mind, we see that the data show that Army deployment activities increased significantly in the 1991–1996 period, measured by the number of personnel deployed as shown. If the full 1991–1996 time period (excluding ODS) is considered, then the data from these two sources indicate roughly a twofold increase in personnel deployed between 1975–1989 and 1991–1996.

Factoring in the Drawdown

Thus far, we have not actually calculated a PERSTEMPO rate—we have simply estimated the number deployed. To calculate a rate, we need to add a denominator to these deployment numbers. We present this calculation separately to highlight the drawdown of U.S. military forces in the post–Cold War period. Taking the Cold War and post–Cold War estimates, which provide a partial estimate of deployment activity, we factor in the drawdown that occurred in the 1990s. Figure 3.3 provides active Army endstrength data from 1975 to 1996.[32]

From 1975 to 1989, Army endstrength remained fairly constant. The average active Army endstrength for those years was 773,003. Between 1975 and 1996, active Army endstrength fell by more than one-third, from 781,316 to 487,000. For the 1975 to 1989 period, the active Army deployment PERSTEMPO rate was 6422 personnel deployed (annual average, 1975–1989) divided by 773,003 endstrength (annual average, 1975–1989) for a rate of 0.83 percent. For the 1991–1996 period, active Army deployment PERSTEMPO rate was 12,911 personnel deployed (monthly average, 1991–1996), divided by 568,324 endstrength (annual

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[32] Department of Defense, *Selected Manpower Statistics, FY 1996*, US GPO, Washington, D.C., circa 1997.

average, 1991-1996) for a rate of 2.3 percent. Therefore, placing the deployment numbers of the two periods into this context, the twofold increase in numbers deployed from the 1975–1989 period to the 1991–1996 period becomes a threefold increase when we use a rate of deployment for the active Army.

Ideally, we would also examine deployment PERSTEMPO in terms of days away on deployment, rather than just in terms of numbers of personnel deployed.
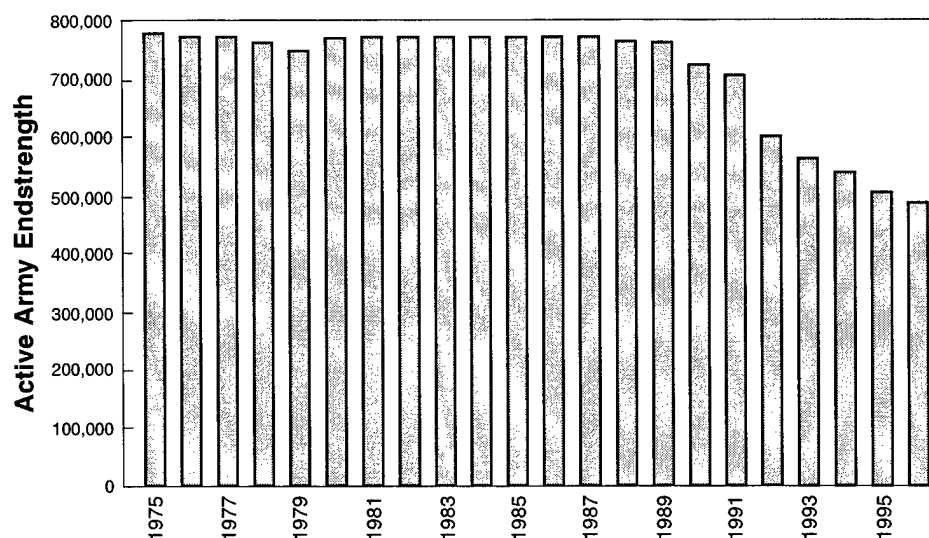
Figure 3.3—Active Army Endstrength, 1975–1996

While the ODCSOPS data for the post–Cold War period did not provide information on days away on deployment, we could draw on the FES data to indicate whether using days away on deployment as our unit of measurement would have altered our results. Recall that Table 3.1 reports an average deployment of 87 man-days per person deployed. Once again, we did not have the 1991–1996 data on days away on deployment, but we do know that the standard Bosnian deployment has been for six months (180 days). Deployments to Bosnia dominated total deployments after December 1995, accounting for roughly 80 percent of deployments reported during that period in the ODCSOPS database. If the average deployment was longer than 87 days in the post-Cold War period, then the increase of deployment activity (measured in terms of days away on deployment) in the 1991–1996 post–Cold War period was even greater than the threefold increase previously calculated.

The available data show that the Army was more deployed in the first half of the 1990s than it was during the Cold War era, and that the increase in deployments took place at a time when the force was reduced by one-third. The post–Cold

War increase in Army deployment rate was roughly threefold. We must point out that this estimate was based upon at best somewhat problematic data sources—there was no consistent time series of deployment data that spanned the Cold War and post–Cold War eras. No single database tracked the full spectrum of Army activities (any day away from home), across time (a number of years), for different groups within the Army (individuals, skill groups, units, components, etc.). And we lacked data for days away on deployment, which would have provided a more accurate picture of the time spent on deployments. However, conclusions about two- or threefold increases in activity seem plausible.

How Much of Army Activities Do Post–Cold War PERSTEMPO Rates Represent?

The second issue to address at the aggregate level was how much of active-Army activities PERSTEMPO activities represented in the early post-Cold War era. For this analysis, we used the data on Army post–Cold War deployments of enlisted personnel created by the Army ODCSPER. Another set of data provides the denominator in terms of deployable Army enlisted personnel.

As Chapter Two describes, the ODCSPER database on Army post–Cold War deployments was compiled from enlisted-personnel records. It contained the number of individuals deployed every two weeks from 1993 to 1996 for
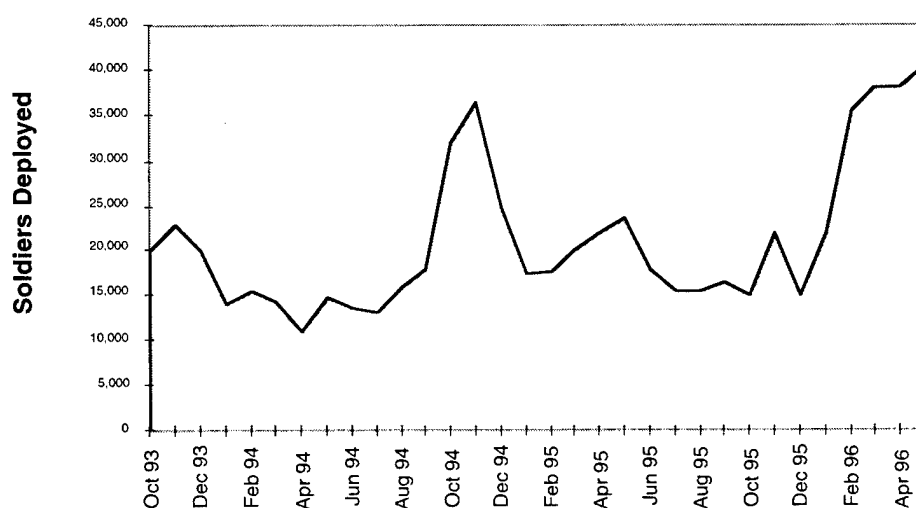
Figure 3.4—Army Enlisted Personnel Deployed, 1993–1996

operational, civil, humanitarian, counter-drug, major OCONUS training exercises, U.N. Staff and Special Forces (Figure 3.4). These data show more personnel deployed than the ODCSOPS data because they include more activities, e.g., major OCONUS training exercises. We expected them to be more accurate because they were extracted from personnel records rather than mined from reports.

The second set of data, providing what portion of the active Army was deployable, appears in Figure 3.5. These data were derived from multiple sources. Note that the Army had not designated these forces as undeployable; this was our own definition, which we purposely made generous to set a higher bound.

We broke down active Army personnel into five categories: temporary undeployables,[33] Army forces deployed to Korea, those in the TTHS category, personnel who are part of TDA Army, and deployables. Deployable personnel were simply the total number of active Army personnel less those other four

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[33]Roughly 5 percent of the Army is undeployable at any given time, typically due to medical or personal reasons. We do not know the distribution of these undeployables across the categories in Figure 3.5, but have assumed they are distributed evenly (that is, 5 percent of the Korean, TTHS, TDA, and "deployable" forces are undeployable).
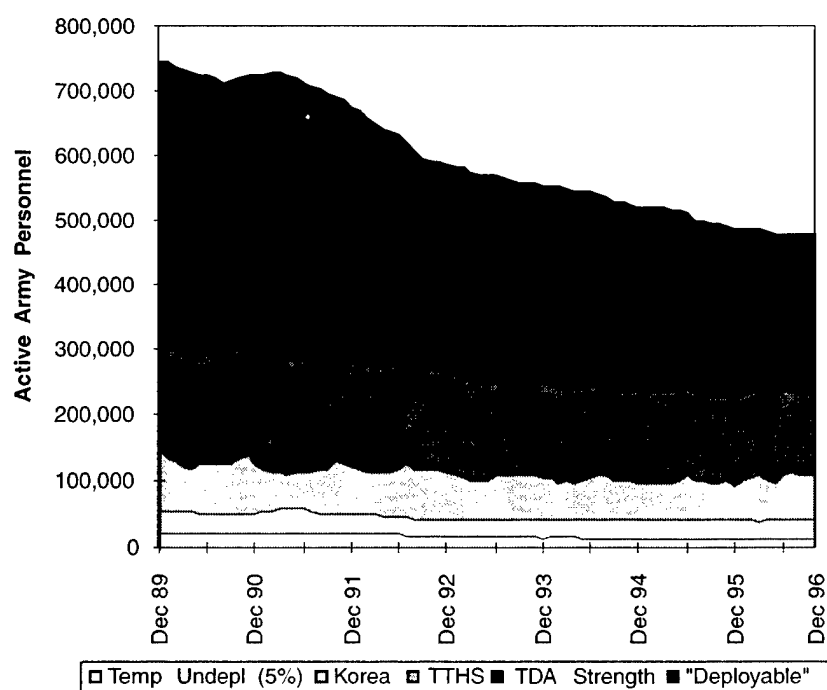
Figure 3.5—Active Army Personnel by Deployable and Undeployable Categories, 1989–1996

categories. This was our definition of deployable Army personnel and was what we use in our calculations for this chapter. Other definitions of "deployable" differ. For instance, the Army SKILLTEMPO database only counted as undeployable TTHS and forces deployed to Korea.

Our breakdown of total Army undeployables shows that in May 1996, temporary undeployables, Korean forces, TTHS, and TDA accounted for 5 percent, 5.5 percent, 11.7 percent, and 25.2 percent of the total active Army, respectively. These added up to 47.4 percent of the Army in May 1996 (they went as high as 50.4 percent of the active Army in July 1996).

The primary limitation of the ODCSPER database was that it did not account for officers. A second limitation was that it did not consider the full range of activities that one might wish to include, such as routine continental United States (CONUS) training activities that are off-post. The Army began tracking those routine off-base training activities (that are at least one night away from home in duration) in its PERSTEMPO databases in Fall 1997.

We calculated an average active enlisted Army deployment PERSTEMPO rate for the 1993–1996 period. As our numerator, we used active Army enlisted deployments from Figure 3.4. For our denominator, we used three different

definitions, all taken from Figure 3.6. Since the data in Figure 3.5 were for all active Army personnel, we estimated figures for enlisted personnel by multiplying by the average fraction of enlisted personnel—84 percent. In the first case, we used total active enlisted Army personnel in the denominator. In the second case, we used the Army SKILLTEMPO definition of deployable, which counted only TTHS and Korean forces as undeployable. Finally, in the third case, we used our own definition of deployable, which counts as undeployable TTHS, TDA, Korea, and the roughly 5 percent of forces that are undeployable because of personal or medical reasons. For both the numerator and denominator, we summed up the monthly data for October 1993 to June 1996 and divided by the number of months in that time period.

The average number of enlisted personnel deployed during the 1993–1996 time frame (our numerator) was 24,527. The denominator was either 447,660, 375,271, or 240,140, corresponding to the three definitions we have given (see Table 3.2).

Putting the numerator and denominator together, we can see what fraction of Army enlisted personnel were deployed on major OCONUS deployment events, including training, between 1993 and 1996. If we use a denominator of total enlisted Army personnel, then the average deployment PERSTEMPO rate for

Table 3.2

Aggregate Active Army Enlisted Deployment PERSTEMPO Rates Average, 1993–1996

	Numerator: Personnel Deployed	Denominator: "Deployable"	Aggregate "PERSTEMPO" Rates
Case 1: Denominator = Total Enlisted Army	24,527	447,660	5.5%
Case 2: Denominator = Deployable Enl Army (TOT less Korea, TTHS)	24,527	375,271	6.5%
Case 3: Denominator = Deployable Enl Army (TOT less Korea, TTHS, TDA, undeployables)	24,527	240,140	10%

Army enlisted personnel over this time period is 5.5 percent. This figure is lower than the 8 percent figure estimated from the DMDC data for 1991–1998 (Fig. 3.2).

If we use the Army definition of deployable (excluding TTHS and Korea), then the rate is 6.5 percent. And if we use the more generous definition of deployable—excluding TTHS, TDA, 5 percent undeployables and Korea—then the rate is 10 percent.

Thus, the available data show that the Army was more deployed during 1993–1996 than it was during 1975–1989; however, these deployments on average accounted for a relatively small portion of enlisted personnel. While 5 percent were actually deployed, a larger portion of the force was engaged in deployment activities, including preparation for and recovery from deployment. Moreover, toward the end of this period, the percent deployed rose considerably because of the operation in Bosnia.

We need to make one further point about the nature of Army deployments. While the number of personnel involved was fairly small at a point in time, the nature of those activities posed a significant challenge to the Army. For the Army in particular, deployment activities can be highly variable across time— certain units and skills used in Haiti are quite different from the units and skills required in Bosnia (something which we will demonstrate at the end of Chapter Four); the activities occur with relatively short warning; and they are of uncertain direction and duration. The latter point means that the original mission might evolve, could require different skills, and have a different duration than originally planned. Bosnia is a case in point, where the estimated duration of U.S. involvement in Operation Joint Endeavor (OJE) has changed during the course of the operation. Analysis is needed that goes beyond mere numbers to factor in stress accompanying the uncertainty of small-scale contingencies.

Army PERSTEMPO in the Post–COLD WAR Era—By Category

Have some Army-personnel categories been busier than others? Anecdotal evidence suggests the combat support and combat service support skill categories have been the most heavily taxed, but what do the data show? And were the same categories busy across time and across different operations?

To get an overview of Army deployment PERSTEMPO in the early post–Cold War era by category, we looked at Army deployments by four broad categories— combat arms (CA), combat support (CS), combat service support (CSS), and health services (HS)—to determine which of these broad categories had the highest deployment PERSTEMPO rates and whether the same ones were stressed across time.

For this work, we used the three databases described in Chapter Two: BEF, SKILLTEMPO, and DMDC deployment file for Operation Uphold Democracy. We describe here the portion of those databases that we used for our work.[34]

Once again, data availability constrained us in several ways. First, we had only deployment data, rather than data for the full range of Army activities that one would wish to measure. Second, those deployment data did not include all deployments. Third, with the exception of the SKILLTEMPO database, the data available tracked numbers of personnel deployed rather than man-days deployed. For the time frame covered by the database, which coincides with U.S. involvement in OJE (Bosnia), deployment PERSTEMPO measured in terms of number of personnel and number of man-days deployed are relatively close. As explained earlier, this similarity is because the deployments to OJE typically last six months (that is, those personnel deployed are typically deployed for the whole month). Deployment PERSTEMPO rates for the July 1996 SKILLTEMPO database for all active enlisted Army personnel were 8.3 percent (measured in terms of number of soldiers deployed) and 7.6 percent (measured in terms of man-days deployed).

We confine our analysis to active enlisted Army personnel because the Army SKILLTEMPO database was for enlisted only. This approach enabled us to compare results from the three different databases. Finally, as mentioned previously, data availability and the short-term nature of this project precluded examination of the reserve components in this study.

Army PERSTEMPO Rates by Broad Category (CA, CS, CSS, HS) and Occupation

We used the BEF and SKILLTEMPO data to measure Army deployment PERSTEMPO for active Army enlisted personnel by broad category and by individual occupation (MOS).[35] In addition to the three broad categories, we provide a view of combat arms without special operations forces (SOF), which traditionally have a high OPTEMPO.[36] We also provide a separate breakout for

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[34]To link skill information to broader categories (CA, CS, CSS, HS), we had to develop a crosswalk. Information linking skill groups (MOS) to branches was typically provided in the data. Information that linked skill groups to broad categories was not, but it is a relatively straightforward process. See Appendix C.

[35]Data by branch are shown in Appendix A.

[36]Another reason for separating out SOF from combat arms is that Army SOF deployments in the BEF are overestimated. Actual SOF deployment data is classified. The unclassified BEF tagged certain units as deployed, and colored all personnel in those units as deployed. Subsequent discussions with SOC confirm that the BEF SOF estimates are high.

HS, typically part of combat service support. If HS were to be folded into CSS, it would reduce the CSS PERSTEMPO rates only slightly.[37]

We calculated deployment PERSTEMPO for a given time frame in the following way. The BEF provided, by MOS, the number of personnel deployed for a given month and total MOS population. We summed enlisted personnel deployed for all MOSs within a broad category, and divided by the total enlisted population of that broad category also provided by the BEF. This yielded what we refer to as a deployment PERSTEMPO rate for active Army enlisted personnel. For calculations using the Army SKILLTEMPO database and the DMDC deployment file for Haiti, we follow the same procedures. Note that these databases did not break deployments down any further.

Rates by Category

Figure 3.6 shows the deployment PERSTEMPO rates for active Army enlisted personnel by broad category (CA without SOF, CS, and CSS without HS), for six
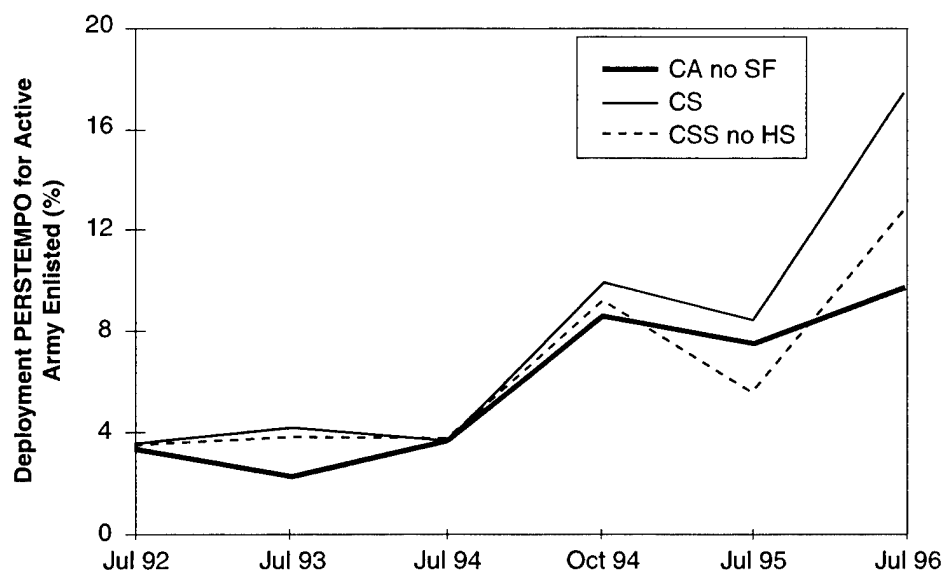
Figure 3.6—Active Army Enlisted Deployment PERSTEMPO for Six Selected Dates, 1992–1996 (BEF)

BEF data points. We find that the deployment PERSTEMPO rate for CA was less than that for CS or CSS for all dates except July 1995 (individual charts for each of these dates are provided in Appendix A).

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[37]The deployment PERSTEMPO rate for CSS for the July 1996 BEF without HS is 12.85 percent, and with HS factored in is 11.66 percent.

As a point of comparison, we have also looked at our third major database, the DMDC Haiti deployment file, to see which category was busiest in that operation. We find that CS had the highest deployment PERSTEMPO rate of 5.6 percent, CA the next highest with 5.2 percent, and CSS the third highest with 4.4 percent.

In summary, during the early post–Cold War period, combat support skill groups had the highest PERSTEMPO rates according to our three databases. This finding was consistent across the dates we were able to examine.

Rates by Occupation (MOS)

We first provide an overview of SKILLTEMPO (from the Army SKILLTEMPO database) for all 217 Army enlisted MOSs (see Figure 3.7) for July 1996—during OJE (Bosnia).

The data show that even during this time of relatively high activity, only four skill groups had a deployment SKILLTEMPO rate of 25 percent or more using the Army definition of SKILLTEMPO. The average monthly deployment rate for all 217 Army enlisted MOSs in October 1996 was 8.3 percent. We provide a
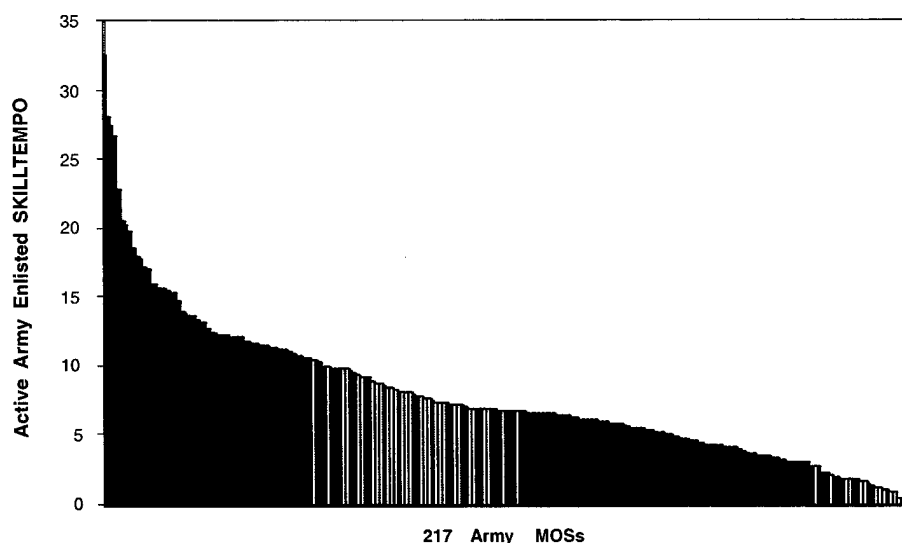
Figure 3.7—Active Army Enlisted SKILLTEMPO, July 1996
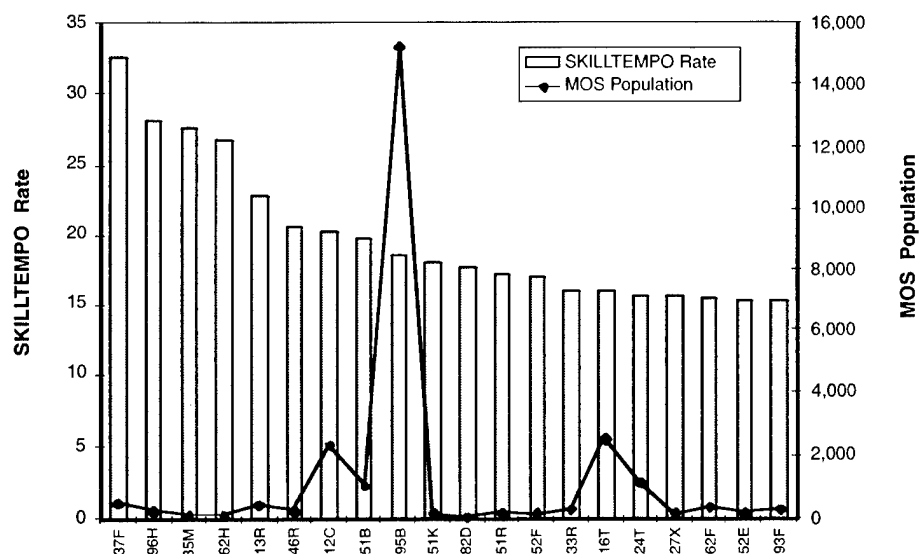
Figure 3.8—Active Army Enlisted Skill Groups (MOS) With Highest SKILLTEMPO for July 1996

breakout of the 20 skill groups with highest SKILLTEMPO rates for July 1996 in Figure 3.8.[38] The information for Figure 3.8 is also provided in Table 3.3.

The first thing to note about these skill groups is that many of them have relatively small populations. We have excluded from this list MOSs with populations of fewer than 50 personnel.[39] Some of the MOSs with high SKILLTEMPO—Psyops Specialists (37F), Military Police (95B), and Patriot Crews (16T)—are ones that have been cited numerous times in the literature as assets that are in demand in the post–Cold War era. Others, notably the ones related to construction, are more uniquely associated with OJE, where the Army has been heavily involved in building or renovating buildings and general construction.

Are these same MOSs always in demand for post–Cold War deployments, or is there variation in the demand for skill groups? To examine demand for skill groups across time, we next looked at SKILLTEMPO rates for two points in time when the United States was involved in two different operations. For this we

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[38]MOSs with populations greater than 50.

[39]Two highly deployed MOSs in the SKILLTEMPO database had MOS populations of less than 50. MOS 27G, CHAPARRAL/REDEYE REP, has a population of only 8. MOS 16S, MANPADS CREWMEMBER, has a population of only 15.

Table 3.3

Army Enlisted Skill Groups (MOS) With Highest SKILLTEMPO for July 1996

Skill Group (MOS)	MOS Description	MOS Population	MOS Deployable Population	MOS Personnel Deployed	MOS SKILLTEMPO Rate (%)*
37F	Psyops Specialist	487	436	142	32.57
96H	Imagery Ground Station Operator	236	149	42	28.19
35M	Radar Repair	128	80	22	27.50
62H	Concrete/ Asphalt Equipment Operator	108	101	27	26.73
13R	FA Firefinder Radar Operator	457	390	89	22.82
46R	Broadcast Journalist	224	161	33	20.50
12C	Bridge Crew-member	2,358	1,894	384	20.27
51B	Carpentry/ Masonry Specialist	1,048	876	173	19.75
95B	Military Police	15,234	12,578	2,326	18.49
51K	Plumber	169	150	27	18.00
82D	Topographic Surveyor	85	79	14	17.72
51R	Interior Electrician	210	181	31	17.13

Table 3.3—continued

Skill Group (MOS)	MOS Description	MOS Population	MOS Deployable Population	MOS Personnel Deployed	MOS SKILLTEMPO Rate (%)[*]
52F	Turbine Eng Drv Repair	157	129	22	17.05
33R	EW/I Aviation Systems Repair	277	188	30	15.96
16T	Patriot Missile Crew-member	2,530	1,853	294	15.87
24T	Patriot Op Sys Mechanic	1,124	729	114	15.64
27X	Patriot Sys Repairer	151	128	20	15.63
62F	Crane Operator	367	318	49	15.41
52E	Prime Power Pdn Spec	203	164	25	15.24
93F	FA Met Crew-member	274	210	32	15.24

[*]The SKILLTEMPO rate reported here is the MOS personnel deployed divided by the MOS deployable population.

used the BEF, the only source that provides information on all Army deployments for different operations.[40] The October 1994 BEF includes Operation Uphold Democracy (Haiti), which was conducted from September 1994 to April 1995. The July 1996 BEF includes OJE (Bosnia), which is ongoing.

Figure 3.9 shows the fifteen MOSs with highest SKILLTEMPO rates for October 1994, plotted against those same MOSs and associated SKILLTEMPOs for July 1996. We exclude the special operations forces MOSs that have been assigned unusually high SKILLTEMPO rates.[41]

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[40]DMDC deployments files exist that could compare MOSs across Operation Desert Storm, Operation Uphold Democracy, and Operation Joint Endeavor. However, those files only contain deployments to those operations and exclude other deployments.

[41]These include 37F, and the full 18 series (18B, 18C, 18D, 18E, 18F, 18Z).
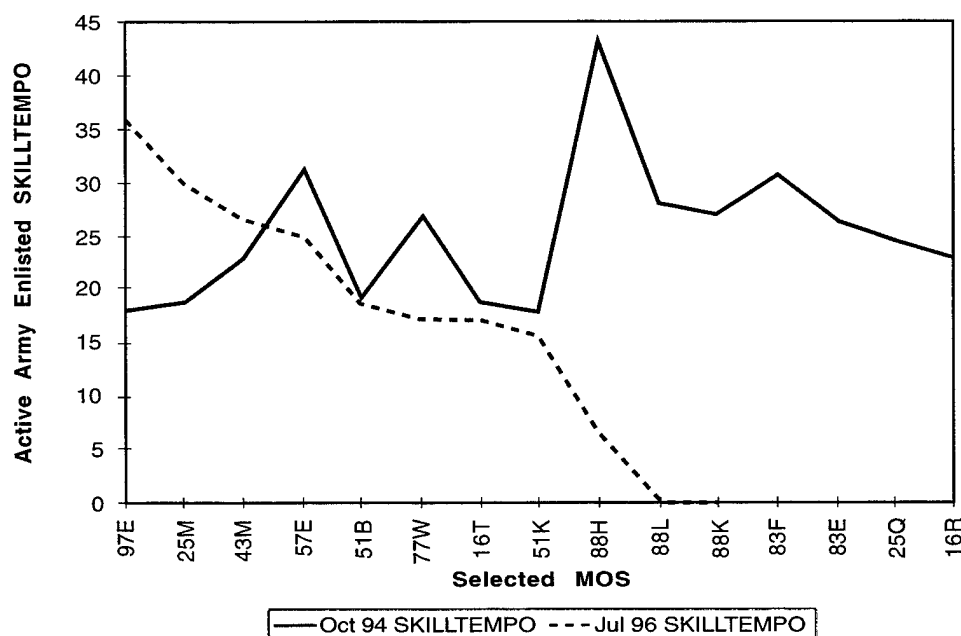
Figure 3.9—Active Army Enlisted SKILLTEMPO for Highly Deployed MOS,
October 1994 and July 1996[42] (BEF)

We find that some MOSs were relatively highly deployed (greater than 15
percent SKILLTEMPO) during both time frames—fabric repair specialists (43M),
Laundry and Bath Specialists (57E), Interrogators (97E), Media Illustrators (25M),
Carpentry & Masonry Specialists (51B), Water Treatment Specialists (77W),
Patriot Missile Crewmembers (16T), and Plumbers (51K). Other MOSs that had
high SKILLTEMPOs during Operation Uphold Democracy were not used at all
or were used minimally in Operation Joint Endeavor in 1996. These include a
variety of watercraft and cargo skill groups (88H, 88K, 88L) that were needed in
Haiti because of its geography.

It is difficult to generalize from only two observations. Further analysis of
additional data is needed to determine how variably different skill groups are
deployed in the post–Cold War era, and variability is a critical issue for force
structure for which both the average and peak levels of activity are important.
The nature of Army operations in the early post–Cold War era, combined with
how the Army moves and deploys its forces, would suggest that this pattern
would hold—that is, demand for Army enlisted skills varies. Some skill groups,

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[42]MOS key: 97E—Interrogator, 25M—Media Illustrator, 43M—Fabric Repair Specialist, 57E—
Laundry & Bath Specialist, 51B—Carpentry & Masonry Specialist, 77W—Water Treatment Specialist,
16T—Patriot Missile Crewmember, 51K—Plumber, 88H—Cargo Specialist, 88L—Watercraft
Engineer, 88K—Watercraft Operator, 83F—Printing & Binding Specialist, 83E—Photo & Layout
Specialist, 25Q—Graphics Document Specialist, and 16R—Volcano Crewmember.

such as Military Police and Psyops Specialists, will more consistently be in high demand. Others, such as the watercraft specialists used in Haiti, are operation-specific.

4. Assessing the Impact of PERSTEMPO

We have surveyed the data and measures on Army PERSTEMPO that existed at the time of the 1997 QDR. We have found that Army PERSTEMPO increased in the early post–Cold War era, but that most of the time only a relatively small portion of Army personnel were affected.

How might these PERSTEMPO rates affect key areas of national security? Is readiness degraded? Is the quality of life of service members in jeopardy? Are there implications for force structure? These questions are important in understanding how much our forces can do, but further work will be required to answer them. This chapter describes some of the difficulties of measuring PERSTEMPO effects, and provides some examples from metrics currently being used.

What We Don't Know and Why

Several factors contributed to our inability to gauge the impact of current PERSTEMPO rates:

- The measures of PERSTEMPO rates were incomplete.

- It was not yet clear which policy areas PERSTEMPO affects.

- Metrics to assess PERSTEMPO effects had not been developed.

- It was difficult to separate PERSTEMPO effects from other influences.

First, there is the obvious issue that our measures of PERSTEMPO rates were incomplete. We discussed PERSTEMPO data and measurement problems in Chapter Two. Some of those problems include the lack of accurate data that is consistent across time and across services, and the lack of data that would facilitate measurement of PERSTEMPO according to the DoD definition.[43]

Second, it was unclear whether we know all the policy areas that have been or can be affected by high or increased PERSTEMPO rates. PERSTEMPO was first addressed by the Navy as a retention and quality-of-life issue. As OPTEMPO for

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[43]Each of the four databases we examined lacks either data expressed in man-days, individual level data, or one or more of the operational activities included in the DoD definition of PERSTEMPO.

the other services has increased in the post–Cold War era, PERSTEMPO has increasingly become a readiness issue. More recently, in the QDR for example, questions were raised about force structure implications.

Third, we had difficulty gauging the effect because a method for relating PERSTEMPO to policy objectives of readiness, quality of life, or force structure had not yet been developed. Instead, existing policy measures were used, such as the Status of Resources and Training System (SORTS[44]) data for readiness, and retention data for quality of life.

Fourth, one of the main problems in assessing the impact of PERSTEMPO on key policy areas such as readiness, quality of life, and force structure, is that these issues are influenced by a number of factors—not just PERSTEMPO changes. Current measures and analysis often do not separate PERSTEMPO effects from others. For example, during the period we studied, what portion of readiness problems (for equipment, personnel, and the units) was the result of increased PERSTEMPO and what portion was the result of turbulence from the drawdown, with unit closings, mission realignment, and personnel changes?

Finally, with respect to quality of life issues, a further complicating factor exists: People have different preferences. The same PERSTEMPO rate for one person might be regarded as adversely affecting his or her quality of life, while a different person might regard those same events as enhancing it. Certain skill groups, such as special operations forces, expect high PERSTEMPO. That preferences and expectations differ makes it more difficult to assess the PERSTEMPO effects across any larger group.

Examples of Current PERSTEMPO–Effect Indicators

The difficulties described above notwithstanding, the anecdotal evidence in 1997 supported a belief that many military personnel were experiencing stress. Thus, we examined several indicators to determine if any of these pointed to PERSTEMPO as a potential cause. We looked at examples of then-current indicators for readiness, retention, and quality of life. This analysis was not complete; if anything, the examples cited in this chapter underscore the lack of understanding in this area and the need for further work.

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[44]SORTS is DoD's automated system that reports on a unit's ability to undertake its wartime mission, in five dimensions—overall, personnel, equipment and supplies on hand, equipment condition, and training. See U.S. General Accounting Office (1995).

Indicators of Readiness Effects

Concerns were raised over adverse effects across all dimensions of operational tempo on readiness. The Chairman of the House Committee on National Security argued in 1997 that the pressures of the drawdown and operations other than war (OOTW) "are having a significant impact on the readiness of U.S. military forces and are placing at risk the decisive military edge that this nation enjoyed at the end of the Cold War. . . . the readiness of our armed forces is suffering."[45] In an earlier 1994 report, he concluded that "wholesale categories of combat units are managing to preserve short-term readiness only through engaging in a desperate 'shell game' with dwindling resources." His conclusions were based not on official reporting systems, but on the views of military personnel in the field.

What did the existing data indicate? One tool used to look for adverse PERSTEMPO effects on readiness is the SORTS. This system reports on a unit's ability to undertake its wartime mission in five categories—overall, personnel, equipment and supplies on hand, equipment condition, and training. One analysis of SORTS for the January 1990–March 1995 time frame examined 28 Army units and found that readiness remained high for contingency units and generally stable for later-deploying units.[46] The analysts did find significant changes in readiness levels for five active Army units that had participated in contingency operations such as Somalia (and which had relatively high PERSTEMPO rates). Those fluctuations were relatively brief.

However, the results were inconclusive. SORTS has several shortcomings, both in assessing readiness overall and in assessing the effect of PERSTEMPO on readiness. First, PERSTEMPO effects were not easily separated from other effects such as personnel turbulence that is the result of the drawdown. Second, the SORTS system itself has received criticism and has been characterized as a subjective report card on which no commander wants to record a failing grade. Furthermore, SORTS is a snapshot and thus does not predict impending changes in readiness. The system itself falls short of providing a good comprehensive assessment of military readiness.[47]

Cross-leveling is one way in which Army PERSTEMPO influences, and is influenced by, readiness. Cross-leveling occurs when deploying units are manned and equipped at levels below a particular theater's deployability criteria.

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[45]Spence, 1997.

[46]U.S. General Accounting Office (March 1996).

[47]See U.S. General Accounting Office (October 1994).

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The combat support and combat service support units that are in highest demand for smaller-scale contingencies are the units manned at lower rates—sometimes only 70 or 80 percent of their authorized strength. Unit personnel available for deployment are further reduced by those who cannot deploy, typically for medical or personal reasons. The units then have to cross-level—taking personnel from other units—to reach the deployability criterion of the theater.[48]

The importance of tracking cross-leveling and establishing policies to minimize these effects is high. The commander of III Corps, testifying before Congress, said that the most difficult challenge he faces is "providing forces that are normally manned and equipped at a level which is substantially below a particular theater's deployability criteria."[49] Extensive cross-leveling not only jeopardizes the readiness of the deploying unit but also lowers the readiness of the donor units. For Table of Organization and Equipment (TOE) units, readiness and cohesion are potentially degraded. For non–TOE support units with peacetime customers, loss of personnel to fill out deployed units can affect their ability to serve. Further, the workload on those not deployed is increased.

Indicators to track these effects did not exist. However, some anecdotal pieces of evidence did emerge[50] that suggested the extent of this problem. In his congressional testimony, LTG Schwartz cited an example of extensive cross-leveling of one deploying unit which had a lower priority of fill in peacetime. That battalion task force of 760 soldiers had to cross-level 226 personnel from outside the battalion to meet the theater deployment criterion.[51] A second example was from Operation Restore Hope (Somalia), where there was a deployment requirement for ten military police (MP) companies (1193 personnel). While the Time Phased Force Deployment Database (TPFDD) indicated that ten MP companies went to Somalia, the fact was that these 1193 personnel actually came from more than 60 different MP units—41 MP companies and ten MP battalion headquarters (Sorter, 1997).

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[48]Which is typically C-1, translating to 90 percent or better.

[49]Testimony of LTG Schwartz, Commander III Corps, before the Military Readiness Subcommittee and Military Personnel Subcommittee of the National Security Committee, U.S. House of Representatives, on March 4, 1997.

[50]By anecdotal, we mean information that illustrates a point, but which have not been systematically derived to represent the whole.

[51]Testimony of LTG Schwartz, Commander III Corps, before the Military Readiness Subcommittee and Military Personnel Subcommittee of the National Security Committee, U.S. House of Representatives, on March 4, 1997.

Retention Indicators

Concerns have also been voiced that increased PERSTEMPO might be negatively affecting Army retention. Retention is a cross-cutting issue that can affect readiness in the long term, the quality of life of an individual in the short term, or military careers. The Army Deputy Chief of Staff for Personnel (DCSPER) and the Commander of U.S. Army Recruiting Command statement delivered to Congress in March 1997[52] expressed "continued concerns" over retention "because of the changes in the retirement system, the perception of eroding benefits, and high PERSTEMPO." A previous DCSPER had indicated stronger retention concerns, stating that, "My gut tells me that at some point in time we will see a dip in retention. . . . We are probably on the edge."

In his testimony before Congress on March 5, the DCSPER expressed future concerns, but with respect to the present, he stated that the

> Army continues to meet its retention objectives. . . . To date, no evidence suggests that PERSTEMPO has affected retention. In fact, soldier retention rates in our most deployed units is . . . higher than those that do not deploy, as indicated by the 10th Mountain Division in FY95 and the 1st Armored Division in FY96.

Those retention objectives appear in Tables 4.1 and 4.2.

Table 4.1

Comparison of Retention Objectives for 10th Mountain Division with Army Rates for FY94 and FY95

	Percentage of Reenlistment Objective Accomplished (FY94)	Percentage of Reenlistment Objective Accomplished (FY95)
10th Mountain Div.		
Initial term	103	109
Mid-career	135	115
Army		
Initial term	109	105
Mid-career	101	96

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[52]Statement made before the Personnel Subcommittee of the Armed Services Committee, U.S. Senate, March 5, 1997.

The 10th Mountain Division was deployed repeatedly in Fiscal Years 1994 and 1995, including deployments to Somalia and Haiti. Yet retention rates for the 10th Mountain Division, reported in terms of the percentage of reenlistment objective achieved, exceeded 100 percent for that unit. In addition, 10th Mountain retention rates reported here exceeded those for the Army as a whole, except for initial termers in FY94. In FY95, initial reenlistments in the 10th Mountain exceeded its reenlistment objective by slightly more (four percentage points) than the Army as a whole. Mid-career reenlistments in the 10th Mountain were significantly better than the Army as a whole, with rates of 135 percent and 115 percent of their objectives, compared with overall Army reenlistment rates of 101 percent and 96 percent.

Table 4.2 compares retention objectives for the 1st Armored Division in Europe with overall Army retention rates. This unit was the most deployed unit in FY96, during which time it deployed to Operation Joint Endeavor (Bosnia). Once again, we see that reenlistment rates for the 1st Armored Division, measured in terms of the percentage of the reenlistment objective achieved, were higher than in the Army overall.

However, once again, there are problems with using these data. As mentioned previously, retention is influenced by a number of factors, not just PERSTEMPO changes. The measures cited above do not unbundle PERSTEMPO effects from

Table 4.2

Comparison of Retention Objectives for 1st Armored Division with Army Rates for FY96

	Objective	Accessions	Percentage Achieved
1st Armored Division			
Initial term	517	573	111
Mid-career	471	512	109
Army			
Initial term	21,400	21,433	100.2
Mid-career	22,700	22,671	99.9

other effects such as employment conditions in the civilian economy. A recent analysis of the effects of long or hazardous duty on retention did adjust for other factors and concluded that experiencing at least some of this category of PERSTEMPO boosted first-term retention in the mid-1990s (Hosek and Mattock, 1999). However, the longer the duty lasted, the lower the retention rate. The fall-off in retention was faster for hazardous duty and, if deployment lasted long enough, resulted in lower retention for some groups. Overall, however, PERSTEMPO in the mid-1990s had little effect on first-term retention. The effects differed in magnitude by branch and term of service.

Other Quality-of-Life Indicators

Concerns have also been raised regarding the quality of life of military personnel. Secretary of Defense William Perry was sufficiently concerned to appoint a Defense Science Board Task Force on Quality of Life, and direct it to "identify ways of reducing personnel tempo and turbulence."[53] Secretary William S. Cohen was concerned about the long-term effects of PERSTEMPO on the quality of life of service members, stating that effects appeared strongest in the Air Force, the Army, and certain skill groups.[54]

Quality-of-life indicators are especially problematic because they involve individual preferences. Each person has his or her own calculus for balancing family or personal life with career. And, like retention, it is difficult to unbundle PERSTEMPO effects from other factors.

Surveys provide some evidence of whether problems might exist. One Army Sample Survey of Military Personnel (SSMP), which has been administered annually since before Operation Desert Storm, found no difference in "rated levels of unit morale" from the relatively low PERSTEMPO time frame of pre-ODS to the higher PERSTEMPO timeframe of 1996.[55] It also found no difference between these two time periods in intentions to stay in the Army. A third indicator that has been cited relates to missed promotion opportunities. The example we cite is for technicians at an Air Force unit, who indicated in an interview that high OPTEMPO/PERSTEMPO precluded them from studying for promotion exams, and of 55 eligible staff sergeants, not one was promoted.

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[53]U.S. Department of Defense (1995).

[54]Secretary of Defense William S. Cohen, *Annual Report to the President and the Congress,* Washington, D.C., March 1997.

[55]Information paper dated 27 February 1997 on impact of PERSTEMPO, U.S. Army.

Table 4.3

Expected Tours Over 20-Year Army Enlisted Career—Deployments versus Forward Stationing

PERSTEMPO Rates	Number of Three-Year Overseas Tours	Number of One-Year Korean Tours	Number of Six-Month Deployments
1985	1.50	.60	.11
1995	.70	.79	.69

We provide one further indicator that was developed by RAND for this study. We developed a simple illustrative model to examine one aspect of quality of life. That model compares the deployment and overseas stationing demands that an enlisted person faced during an average 20-year career in the Cold War era, based on data from 1985, versus the demands that a person faces today, using 1995 data. The model was based on readily available data. For example, we know that overseas tours are disproportionately filled by younger personnel, many of who do not stay in the Army for a full 20-year career, but we had no data for measuring this difference in seniority. Therefore, we made an assumption about the size of this difference. The model treats every soldier the same and does not account for higher demand for certain skills and other differentiation among service members. A full description of the model is presented in Appendix D.

Given the model assumptions, we find that 1995 PERSTEMPO rates imply that the average enlisted person could expect half as many three-year overseas tours as 1985 rates imply, one-third more one-year Korean tours, and more six-month deployments. While family stability in the short-term appears worse off in the post–Cold War era because of increased deployments, which typically have short notice, it is possible that longer-term family stability is somewhat better off for those personnel with two-career families where overseas tours are more disruptive. More analysis would be needed to draw any definite conclusions.

Regarding *short* (one-year Korean) tours overseas, at both 1985 and 1995 rates, the bulk of soldiers serve one (one-year) Korean tour. Between 1985 and 1995, endstrength was reduced by one-third, while Korean basing was reduced only slightly. This resulted in a larger proportion of soldiers serving Korean tours in 1995 than in 1985.

5. Results and Observations

The objective of this study was to examine the state of knowledge at the time of the QDR with regard to Army PERSTEMPO and the applicability of available data to policy issues, specifically force structure. We found that data and measures on PERSTEMPO were inadequate at the time this research was performed. Data were often incomplete, sometimes inaccurate, and inconsistently defined, measured, or compared. In particular, data on the full spectrum of Army activities that one might wish to measure did not exist, nor were there data that would enable measurement of PERSTEMPO according to the DoD definition.[56] Further, there was little evidence relating varying PERSTEMPO to outcomes such as readiness, quality of life, or force structure requirements in any systematic way. Given these limitations, our examination of the data and analysis suggested the following.

Results

An analysis of Cold War and early post–Cold War Army deployment PERSTEMPO at the aggregate level supports assertions that Army deployment PERSTEMPO increased in the post–Cold War era. However, while deployment PERSTEMPO increased, those activities remained a relatively small portion of overall Army activities in the mid-1990s. The fraction of active Army enlisted personnel deployed in July 1996 during OJE (Bosnia) was 5.5 percent of the total active enlisted Army, or 10 percent of the deployable Army (which excludes TTHS, TDA, 5 percent undeployables, and Korea).[57] This was the ODCSPER-based estimate. BEF data suggested about 7 percent (similar to SKILLTEMPO) and about 12 percent for all deployments.

Looking at broad categories of skills (CA, CS, CSS, HS), we found that combat support assets have the highest deployment PERSTEMPO rates across the post–Cold War time periods that we were able to examine.

We examined deployment PERSTEMPO for skill groups (MOSs), which the Army refers to as SKILLTEMPO. Many of the skill groups with highest

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[56]The services are working to implement the DoD definition.

[57]While 5 percent are actually deployed, a larger portion of the force is engaged in preparing for and recovering from deployment.

SKILLTEMPOs have relatively small populations. Drawing from a limited number of data points, we observe that some MOSs were relatively highly deployed (greater than 15 percent) across all data points. Other MOSs that were highly deployed during one operation—for example, the watercraft skill groups (88H, 88L, 88K) in demand for OUD (Haiti)—were not in demand during OJE (Bosnia).

Drawing general conclusions from only two points in time is difficult. Analysis of additional data is needed to determine how different skill groups are variably deployed in the post–Cold War era. And this varied deployment is important for force structure, where one is interested in peaks of activity. But the nature of Army operations in the post–Cold War era, combined with how the Army moves and deploys its forces, would suggest that this pattern would hold up—that is, demand for enlisted skills varies. Some skill groups, such as military police and psyops specialists, will continue to be in high demand. Others, such as the watercraft specialists used in Haiti, will face high demands only periodically, depending on the operation.

Observations

A review of the results points to some broad issues. First, the data on PERSTEMPO have to improve for them to be useful to policymakers. Given the inadequacies of the databases available for this study, PERSTEMPO rates probably were consistently understated. None of the databases that was available at the time of this work included the full set of deployment activities specified by DoD in its definition of PERSTEMPO.[58] Improvement will require consistent definitions and routine collection of information.

A second point is that different aspects of deployment are relevant to different policy areas. For example, high deployment rates for a small number of individuals is not a concern for those engaged in overall force structure analysis. However, those interested in the sizing of specific units and occupations or in quality-of-life issues could be intensely interested in such a group.

Third, any cross-service analysis has to consider service operating differences in gauging effects. Navy ships carrying marines routinely deploy for six months, and Navy and Marine Corps personnel expect those deployments. Army battalions deploy frequently, but typically for shorter periods, for example, a month at the National Training Center. Thus, even though Army battalions

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[58]To include operational deployments, contingency operations, off-station field training to support operational proficiency (e.g., NTC, RED FLAG), and unaccompanied tours.

know longer deployments are possible, they would perceive a six-month deployment as "long," whereas sailors would regard it as normal. The same is true within a service. Those who are in special operating forces anticipate frequent deployments on short notice. Indeed, for some, that is part of the allure of these units. Members of armor battalions do not hold the same expectation.

Fourth, cross-service analyses also must consider the services' wartime missions and how training for those missions affects or is affected by peacetime deployments. To what extent do various peacetime deployments contribute to or detract from training for one's wartime mission, and what are the implications for readiness? The Navy has largely been able to meet deployment requirements within their normal operating cycles of forward presence. The Army and Air Force have faced the challenge of maintaining readiness for their wartime missions while performing peacetime missions that are not necessarily consistent with their wartime missions.[59]

Finally, there may be a self-correcting aspect to PERSTEMPO issues. Some of the effects attributed to increased OPTEMPO/PERSTEMPO could be a result of other factors, such as the drawdown.[60] Furthermore, expectations may also become institutionalized, as they have in the Navy and in special operating forces. That is, assuming rates remain at the mid-1990s levels, some aspects of PERSTEMPO will become part of the expectation of the forces, and the Army will develop policies and procedures to deal with it as a matter of routine.

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[59]For instance, the Air Force has voiced concerns that for some of its weapons systems, notably the fighters, missions to monitor no-fly zones do not maintain skills and capabilities needed for their wartime missions.

[60]For example, do declining retention rates result from increased PERSTEMPO, from a decrease in promotion opportunities, from an increase in civilian employment opportunities, or from the turbulence of the drawdown?

Appendix

A. Baseline Engagement Force (BEF) Data

We provide here some of the BEF data not included in the body of this report. We include charts for active Army enlisted deployment PERSTEMPO by broad category (CA, CS, CSS, HS) and by the branches for each of these broad categories. Unlike the charts in Chapter Three, the by-category charts shown here indicate the mix of deployed personnel by type. The y-axis scale for the first set of charts—by broad category—is set at a maximum of 45 percent. The y-axis scale for the second set of charts—by branch—is set at a maximum of 60 percent for all branches except special forces, which is set at 70 percent. Data in this appendix are provided for all seven BEF data points: February 1991, July 1992, July 1993, July 1994, October 1994, July 1995, and July 1996.
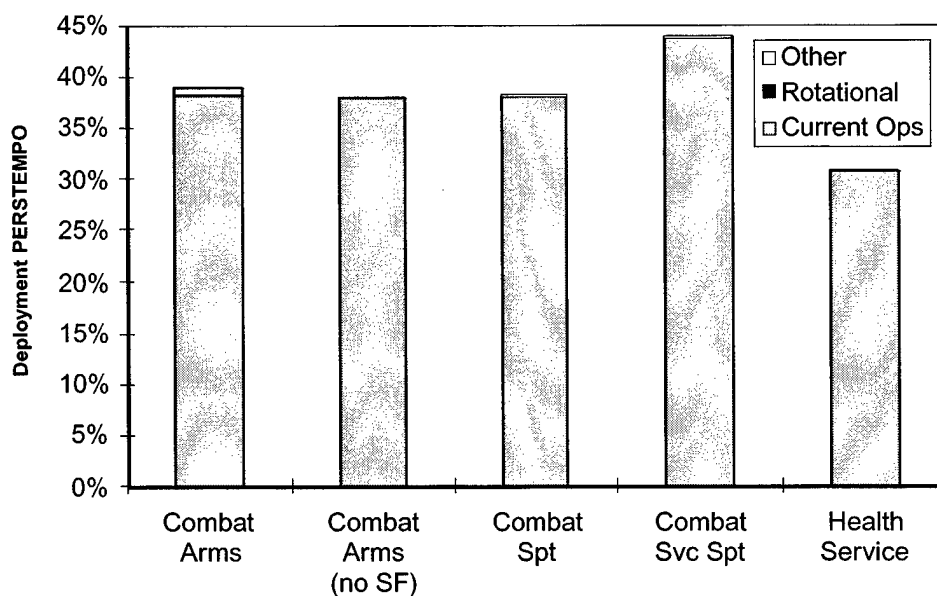

Figure A.1—February 1991 Active Army Enlisted Deployment PERSTEMPO, by CA, CS, CSS, HS

Figure A.2—July 1992 Active Army Enlisted Deployment PERSTEMPO by CA, CS, CSS, HS

Figure A.3—July 1993 Active Army Enlisted Deployment PERSTEMPO by CA, CS, CSS, HS
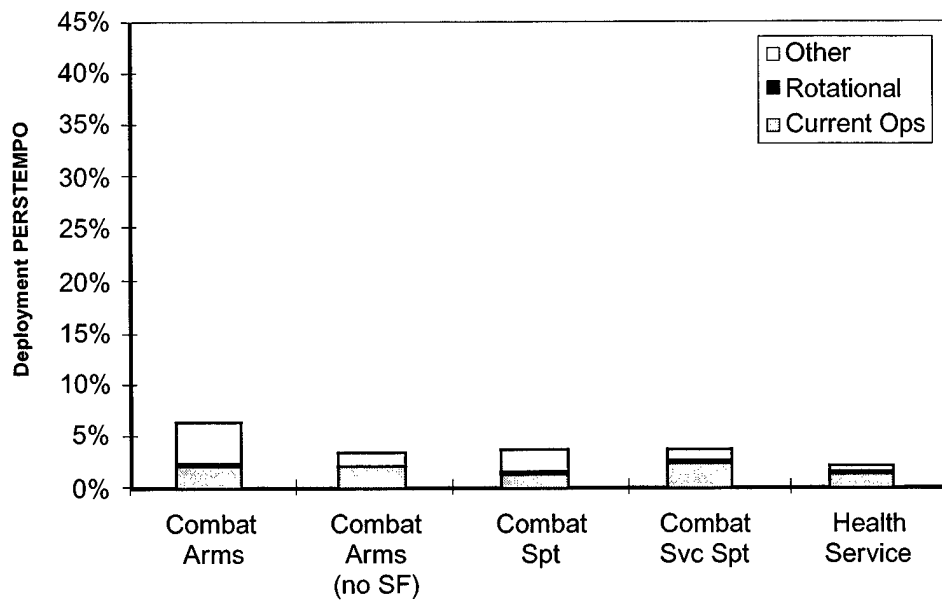
Figure A.4—July 1994 Active Army Enlisted Deployment PERSTEMPO by CA, CS, CSS, HS
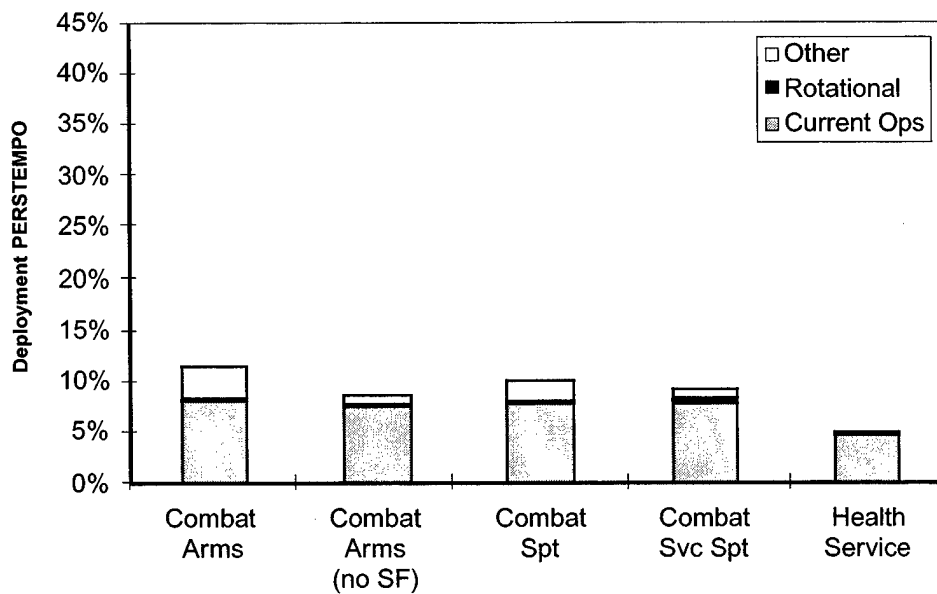
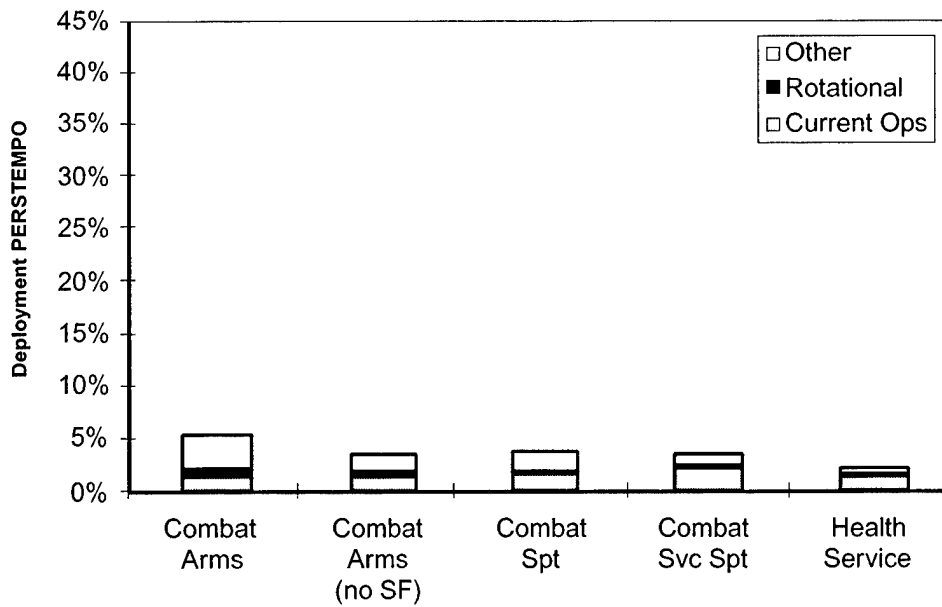**Figure A.5—October 1994 Active Army Enlisted Deployment PERSTEMPO by CA, CS, CSS, HS**
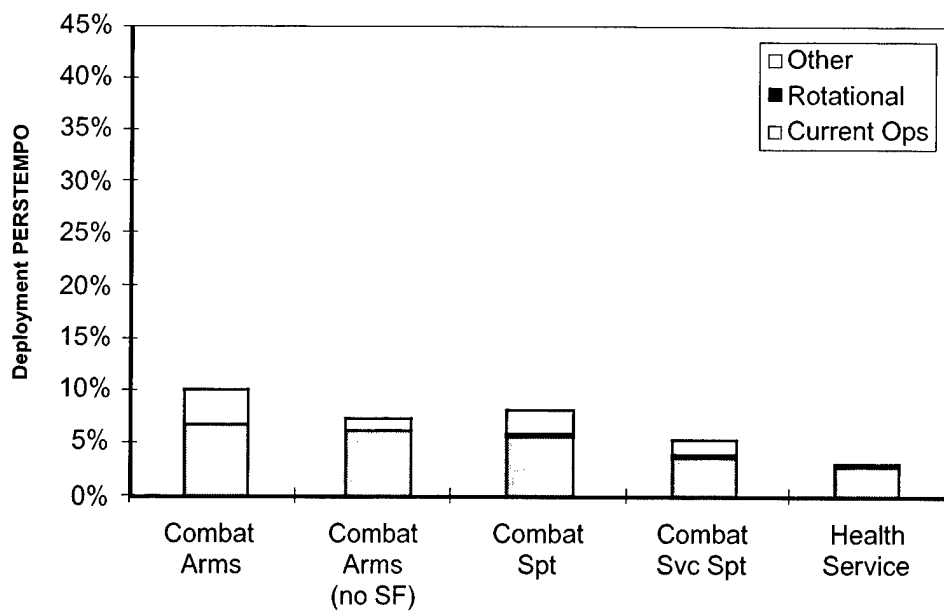
Figure A.6—July 1995 Active Army Enlisted Deployment PERSTEMPO by CA, CS, CSS, HS
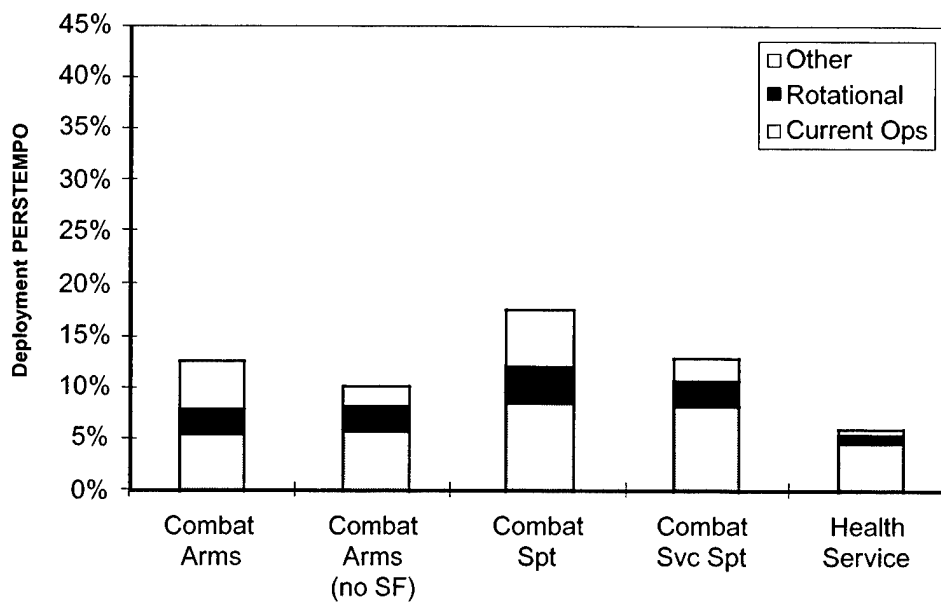
Figure A.7—July 1996 Active Army Enlisted Deployment PERSTEMPO by CA, CS, CSS, HS
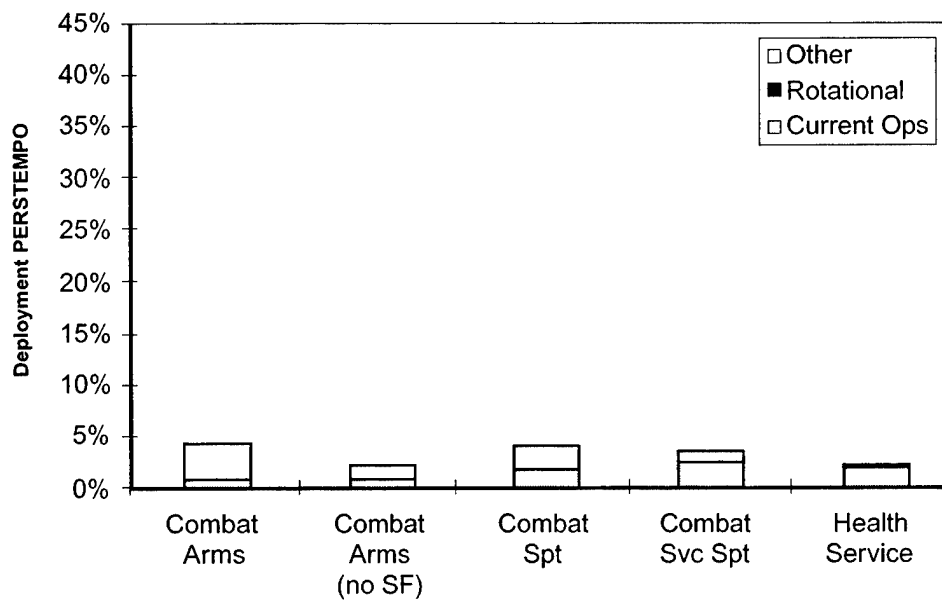
Figure A.8—Active Army Enlisted Deployment PERSTEMPO for Adjutant General Branch, Selected Dates from Feb 91–Jul 96

Figure A.9—Active Army Enlisted Deployment PERSTEMPO for Air Defense Branch, Selected Dates from Feb 91–Jul 96

Figure A.10—Active Army Enlisted Deployment PERSTEMPO for Armor Branch, Selected Dates from Feb 91–Jul 96

Figure A.11—Active Army Enlisted Deployment PERSTEMPO for Aviation Branch, Selected Dates from Feb 91–Jul 96

Figure A.12—Active Army Enlisted Deployment PERSTEMPO for Chemical Branch,
Selected Dates from Feb 91–Jul 96

Figure A.13—Active Army Enlisted Deployment PERSTEMPO for Engineer Branch,
Selected Dates from Feb 91–Jul 96
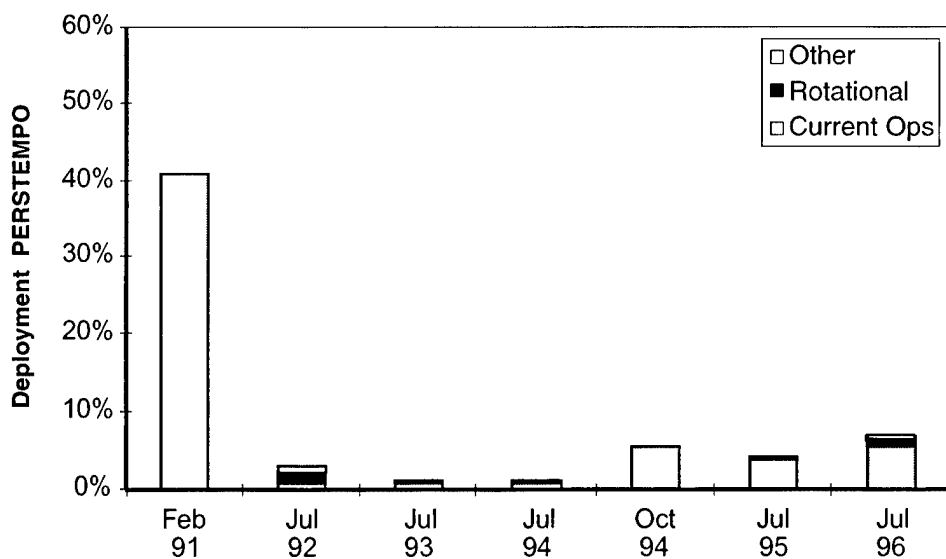
Figure A.14—Active Army Enlisted Deployment PERSTEMPO for Field Artillery
Branch, Selected Dates from Feb 91–Jul 96
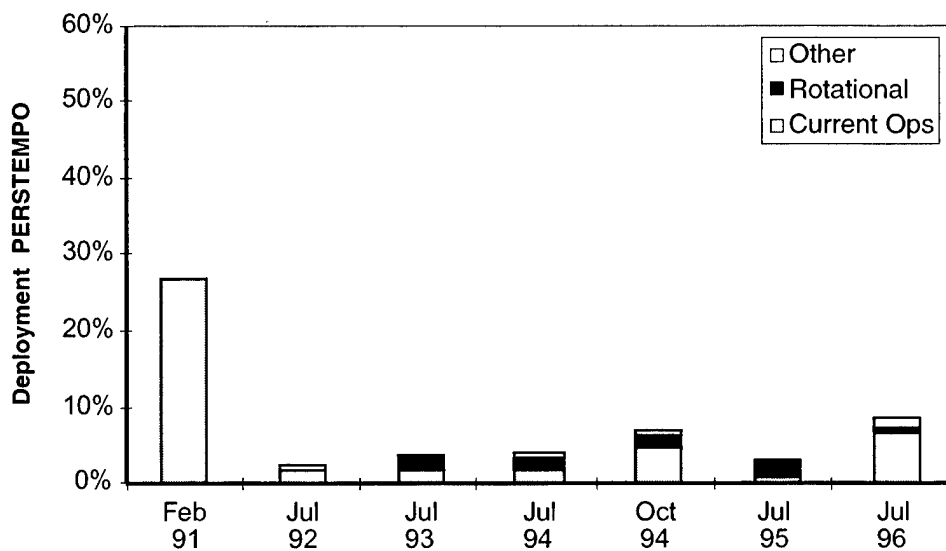
Figure A.15—Active Army Enlisted Deployment PERSTEMPO for Finance Branch,
Selected Dates from Feb 91–Jul 96
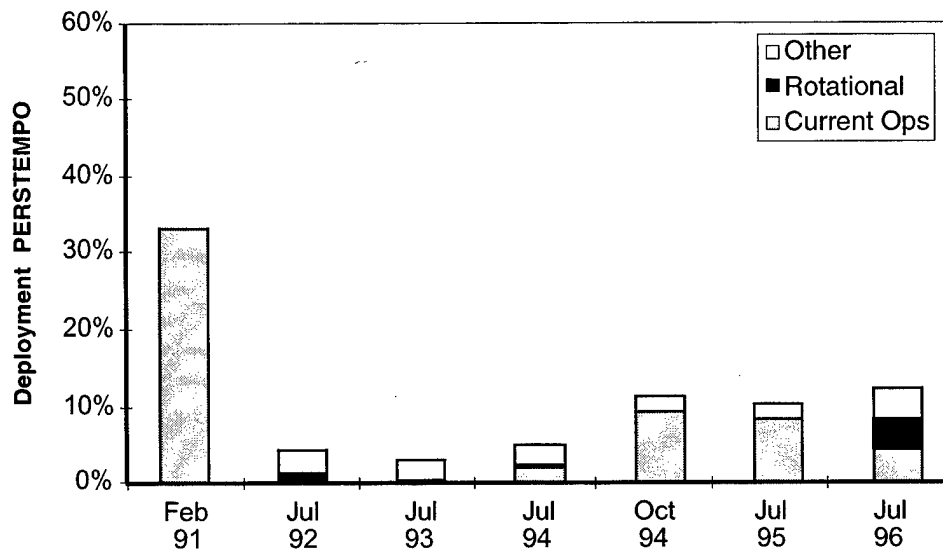
Figure A.16—Active Army Enlisted Deployment PERSTEMPO for Infantry Branch,
Selected Dates from Feb 91–Jul 96
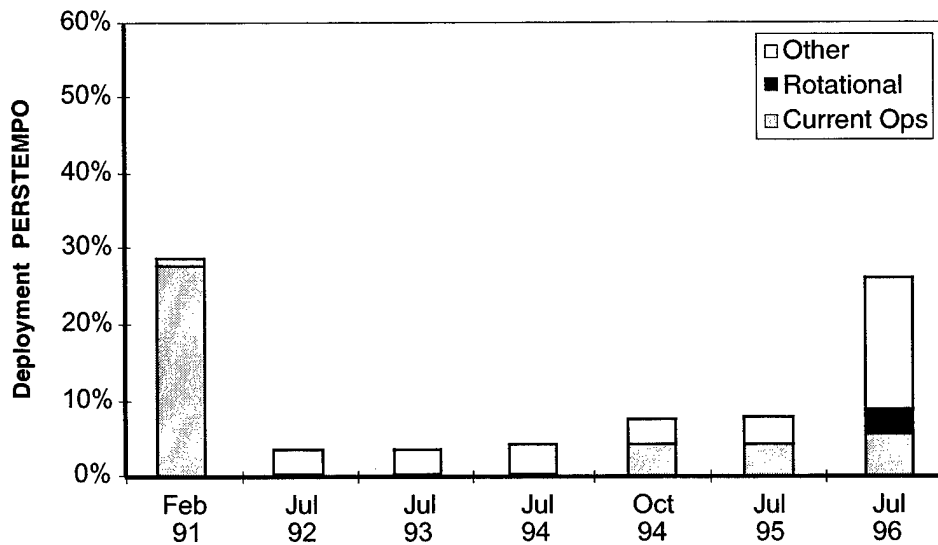
Figure A.17—Active Army Enlisted Deployment PERSTEMPO for Military Intelligence
Branch, Selected Dates from Feb 91–Jul 96
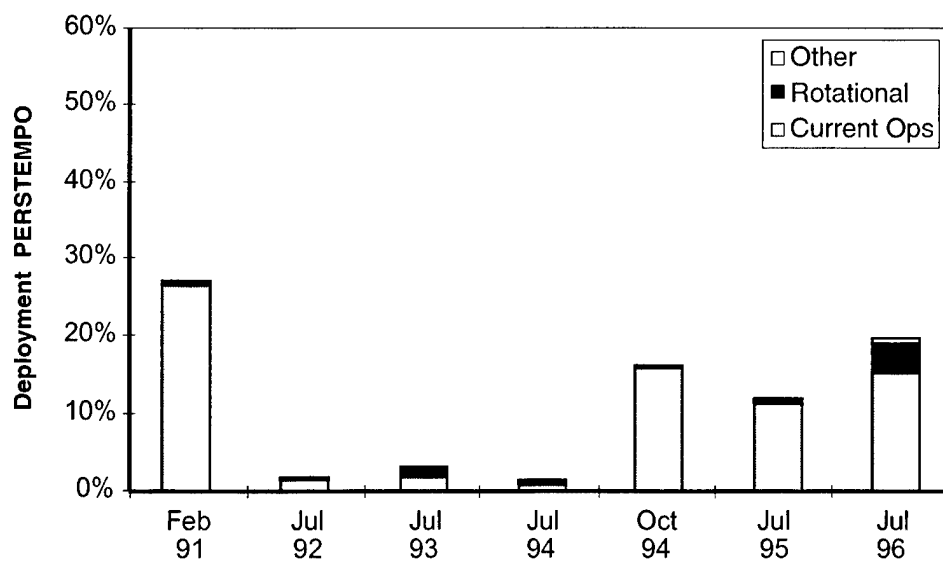
Figure A.18—Active Army Enlisted Deployment PERSTEMPO for Military Police
Branch, Selected Dates from Feb 91–Jul 96
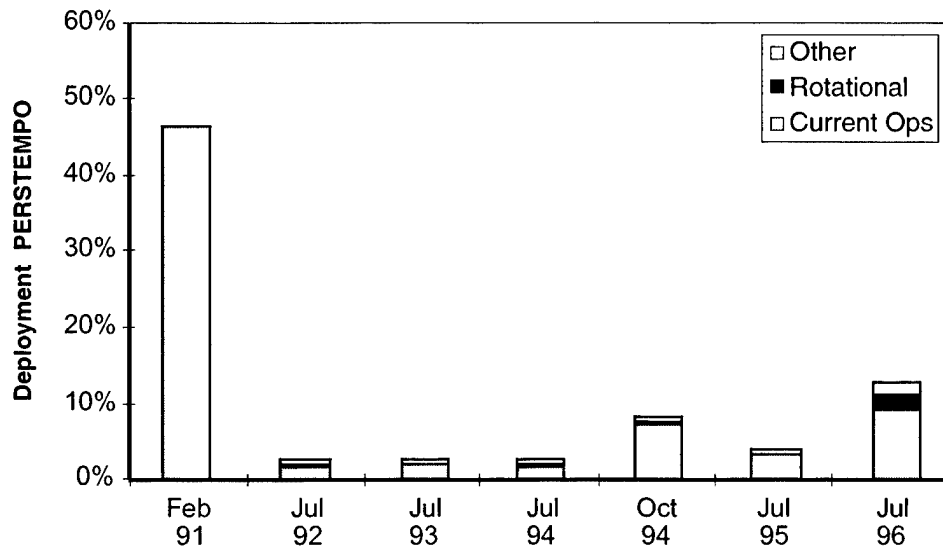
Figure A.19—Active Army Enlisted Deployment PERSTEMPO for Ordnance Branch,
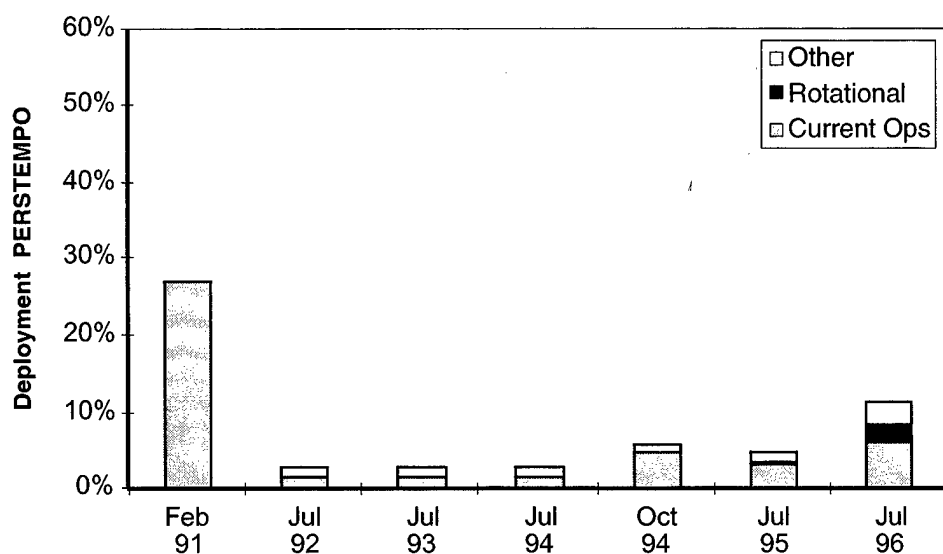Selected Dates from Feb 91–Jul 96
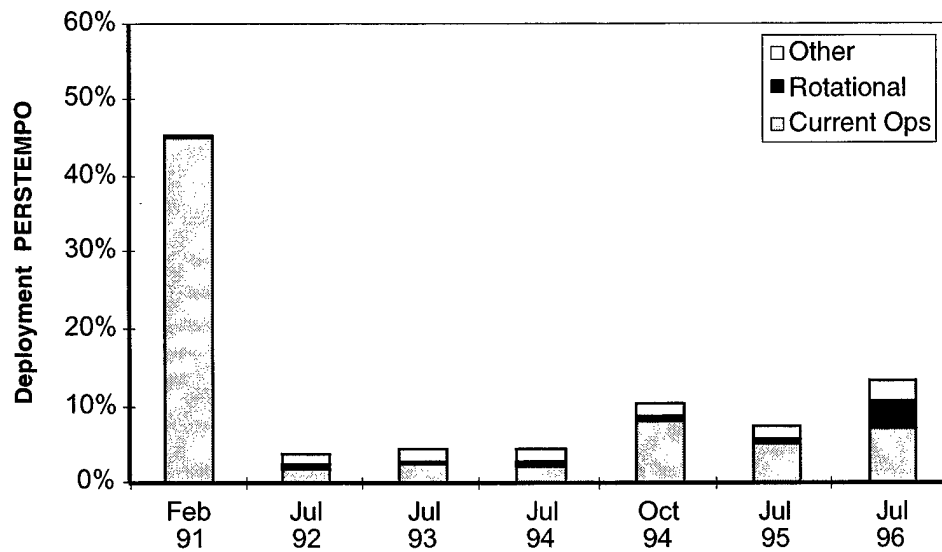
Figure A.20—Active Army Enlisted Deployment PERSTEMPO for Quartermaster
Branch, Selected Dates from Feb 91–Jul 96
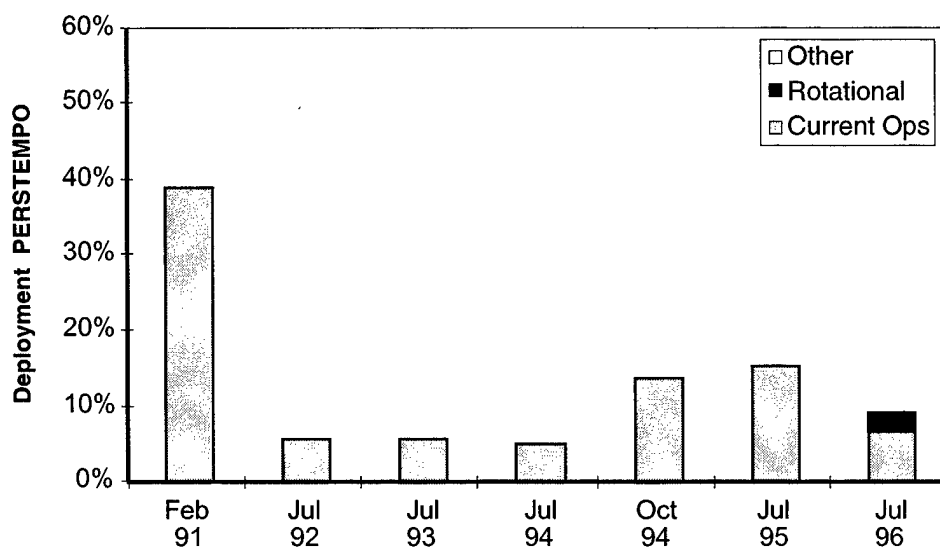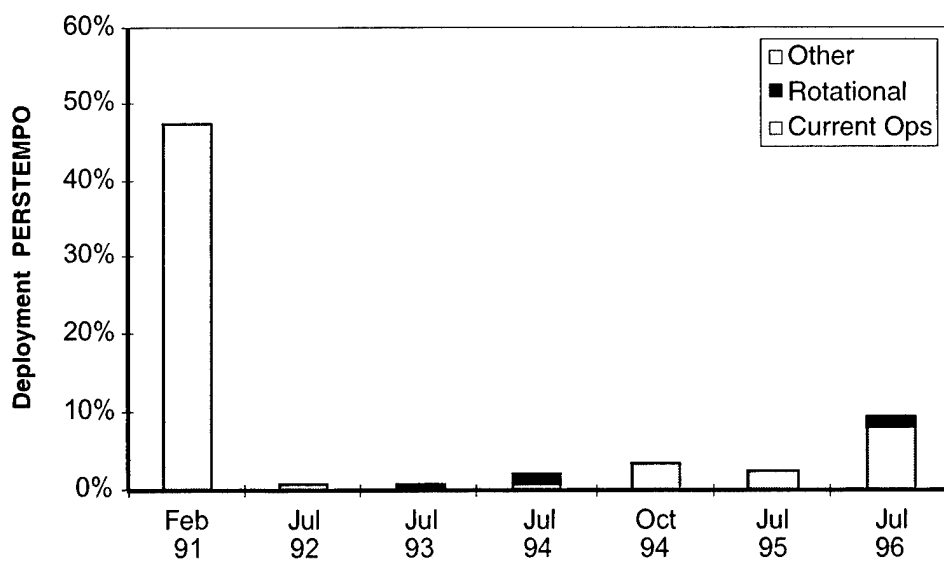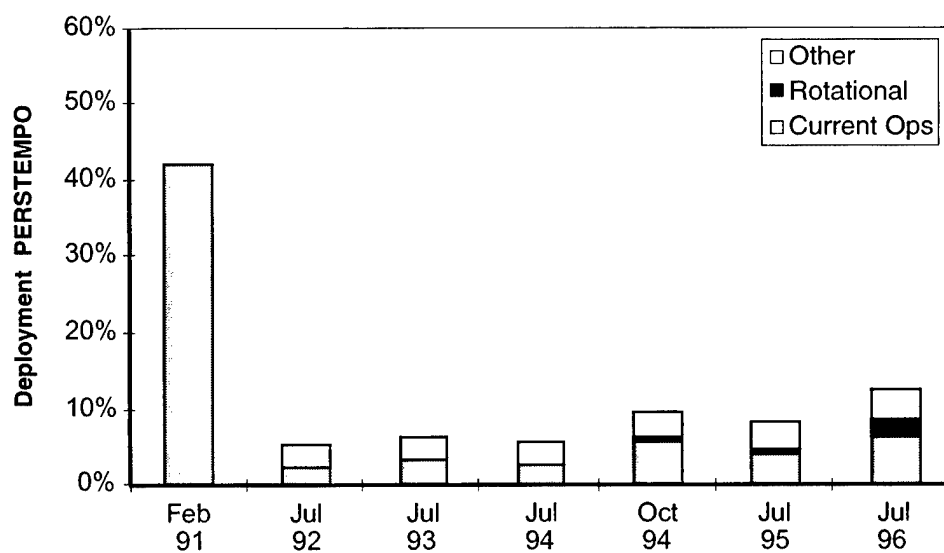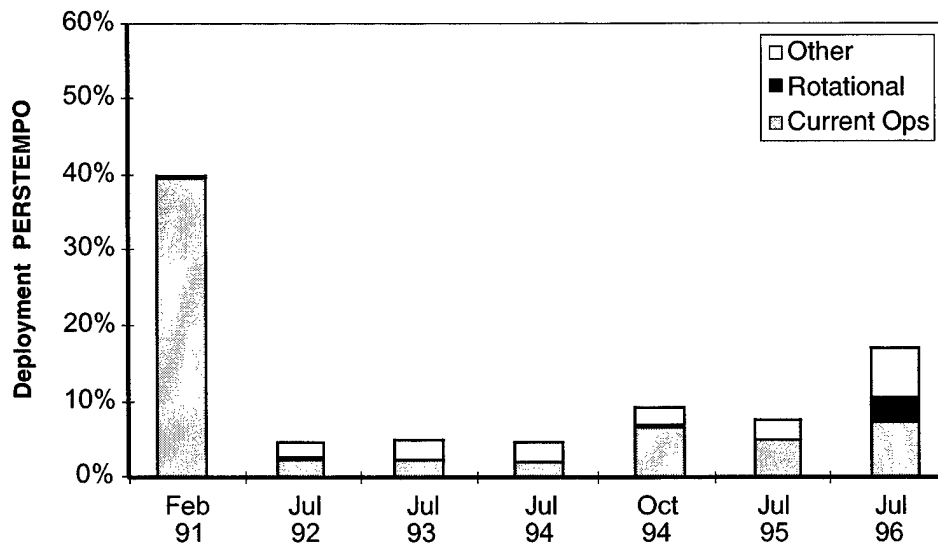

Figure A.21—Active Army Enlisted Deployment PERSTEMPO for Signal Corps Branch,
Selected Dates from Feb 91–Jul 96
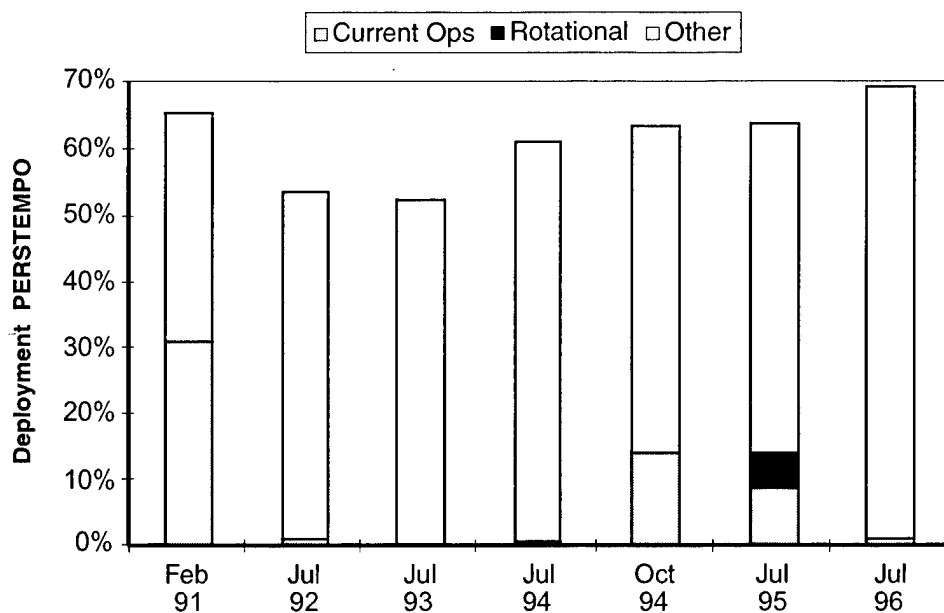
Figure A.22—Active Army Enlisted Deployment PERSTEMPO for Special Forces
Branch, Selected Dates from Feb 91–Jul 96
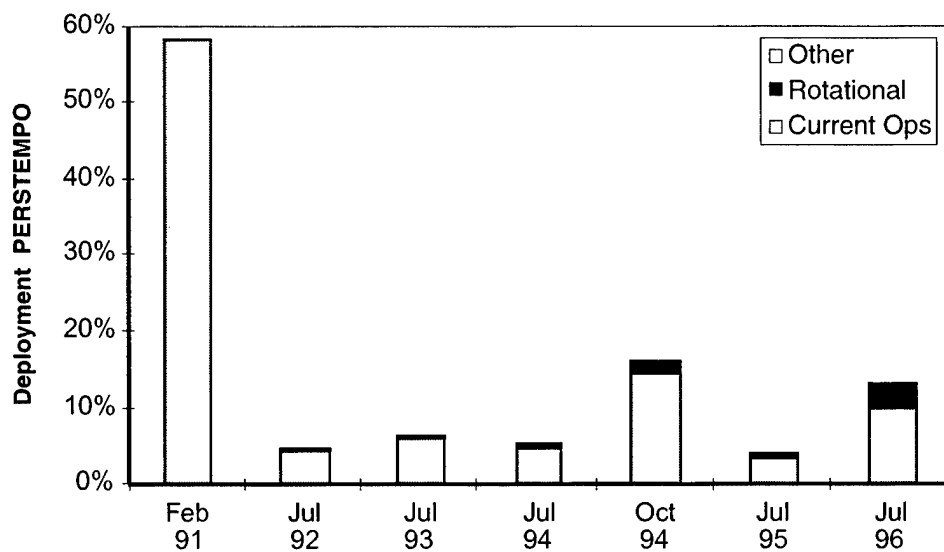
Figure A.23—Active Army Enlisted Deployment PERSTEMPO for Transportation
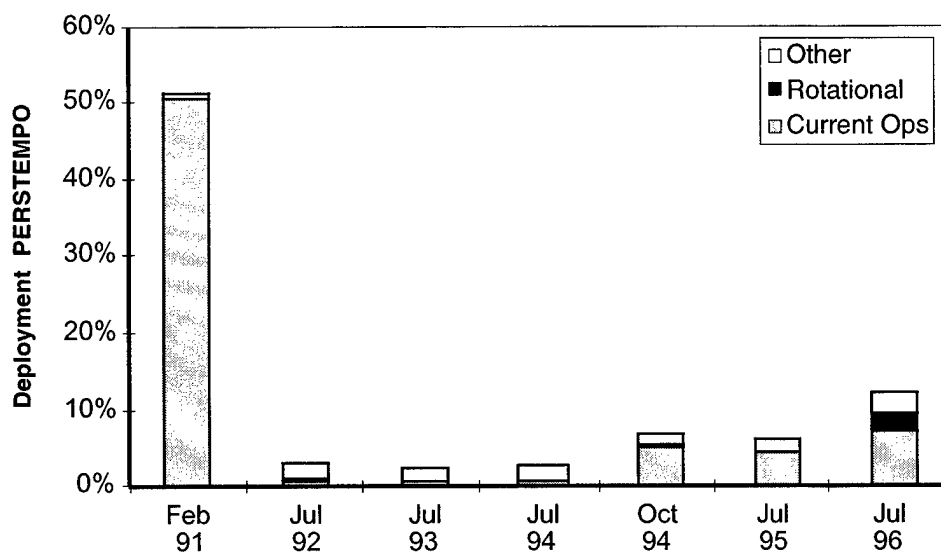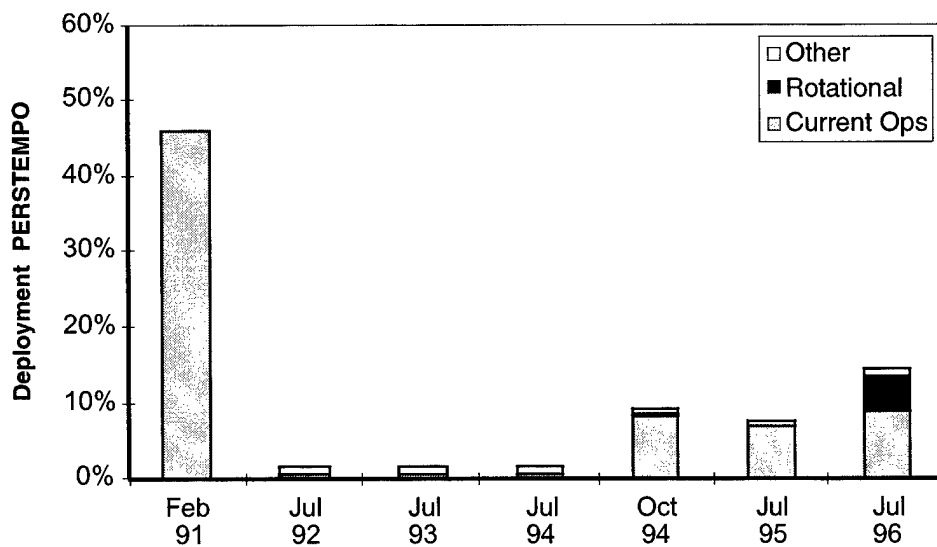Branch, Selected Dates from Feb 91–Jul 96

B. Army Operational and Training Deployments

The Army Office of the Deputy Chief of Staff for Operations (ODCSOPS) compiled a simple spreadsheet database in support of the Quadrennial Defense Review, which provides monthly data on total Army deployments and major training exercises from December 1989 to October 1996. These data were compiled from multiple sources, in a relatively quick fashion, and are estimated by ODCSOPS to underrepresent deployments and major training exercises. Comparisons of the ODCSOPS data with the ODCSPER deployment data for enlisted personnel support this.

We provided information on deployments only in the body of this report. We include the ODCSOPS data on major training deployments as well in Figure B.1.
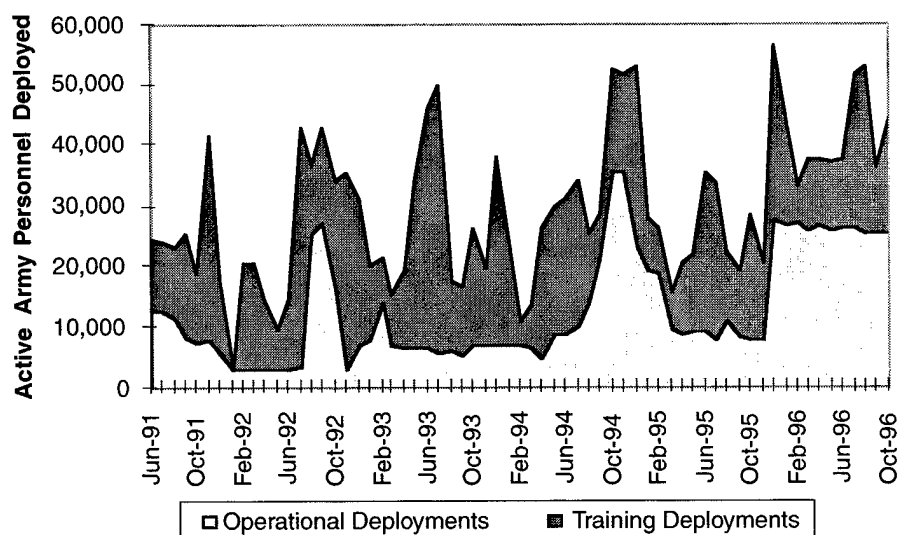
Figure B.1—Active Army Major Operational Deployments and Training Deployments, 1991–1996 (ODCSOPS)

C. MOS to Branch to CA, CS, CSS Crosswalk for Army Enlisted Skill Groups

One piece of information needed for this analysis which did not exist was a crosswalk between skill groups (MOSs) and broad categories (CA, CS, CSS). Information on which skill groups (MOS) were in which branches was typically provided in the data. Information that linked skill groups to broad categories was not. We developed such a crosswalk for enlisted MOSs in Table C.1. These have been scrubbed by ODCSPER.

Table C.1

Army Crosswalk: MOS-> Branch-> CA, CS, CSS

Category	MOS	Branch	MOS Population
Other	00Z	Other	1,076
Combat service support	02C	Other (bands)	80
Combat service support	02D	Other (bands)	114
Combat service support	02L	Other (bands)	160
Combat service support	02M	Other (bands)	108
Combat service support	02Z	Other (bands)	60
Combat arms	11B	Infantry	25,471
Combat arms	11C	Infantry	5,000
Combat arms	11H	Infantry	2,623
Combat arms	11M	Infantry	12,808
Other	11X	Infantry	1,221
Combat arms	11Z	Infantry	281
Combat arms	12B	Engineer	9,704
Combat service support	12C	Engineer	864
Combat support	12Z	Engineer	341
Combat arms	13B	Field Arty	12,207

Table C.1—continued

Category	MOS	Branch	MOS Population
Combat arms	13C	Field Arty	690
Combat arms	13E	Field Arty	1,903
Combat arms	13F	Field Arty	4,715
Combat arms	13M	Field Arty	3,567
Combat arms	13P	Field Arty	919
Combat arms	13R	Field Arty	514
Combat arms	13Z	Field Arty	588
Combat arms	14E	Air Def	1,034
Combat arms	14J	Air Def	951
Combat arms	14R	Air Def	1,220
Combat arms	14S	Air Def	3,349
Combat arms	14T	Air Def	2,180
Combat arms	14Z	Air Def	265
Combat arms	18B	Spec Forces	787
Combat arms	18C	Spec Forces	715
Combat arms	18D	Spec Forces	745
Combat arms	18E	Spec Forces	825
Combat arms	18F	Spec Forces	464
Combat arms	18Z	Spec Forces	680
Combat arms	19D	Armor	7,078
Combat arms	19K	Armor	13,068
Combat arms	19Z	Armor	607
Combat support	25M	Signal	359
Combat support	25R	Signal	189
Combat support	25V	Signal	500
Combat support	25Z	Signal	106
Combat service support	27E	Ordnance	741
Combat service support	27M	Ordnance	422
Combat service support	27T	Ordnance	342
Combat service support	27X	Ordnance	159
Combat service support	27Z	Ordnance	46

Table C.1—continued

Category	MOS	Branch	MOS Population
Combat support	31C	Signal	1,720
Combat support	31F	Signal	3,816
Combat support	31L	Signal	2,189
Combat support	31P	Signal	1,684
Combat support	31R	Signal	6,718
Combat support	31S	Signal	1,720
Combat support	31T	Signal	90
Combat support	31U	Signal	7,709
Combat support	31W	Signal	1,805
Combat support	31Z	Signal	130
Combat support	33R	Mil Intel	289
Combat support	33T	Mil Intel	514
Combat support	33Y	Mil Intel	296
Combat service support	35B	Ordnance	130
Combat service support	35C	Ordnance	64
Combat service support	35D	Ordnance	223
Combat service support	35E	Ordnance	2,077
Combat service support	35F	Ordnance	375
Combat service support	35H	Ordnance	311
Combat service support	35J	Ordnance	522
Combat service support	35L	Ordnance	214
Combat service support	35M	Ordnance	168
Combat service support	35N	Ordnance	460
Combat service support	35Q	Ordnance	88

Table C.1—continued

Category	MOS	Branch	MOS Population
Combat service support	35R	Ordnance	244
Combat service support	35W	Ordnance	549
Combat service support	35Y	Ordnance	273
Combat support	37F	SO-Psy Ops	466
Combat service support	43M	Quarterms	204
Combat service support	44B	Quarterms	778
Combat service support	44E	Quarterms	447
Combat service support	45B	Ordnance	516
Combat service support	45D	Ordnance	170
Combat service support	45E	Ordnance	500
Combat service support	45G	Ordnance	411
Combat service support	45K	Ordnance	1,028
Combat service support	45T	Ordnance	346
Combat service support	46Q	Public Aff	406
Combat service support	46R	Public Aff	270
Combat service support	46Z	Public Aff	58
Combat support	51B	Engineer	1,090
Combat support	51H	Engineer	498
Combat support	51K	Engineer	178
Combat support	51M	Engineer	268
Combat support	51R	Engineer	218

Table C.1—continued

Category	MOS	Branch	MOS Population
Combat support	51T	Engineer	300
Combat support	51Z	Engineer	160
Combat service support	52C	Ordnance	1,414
Combat service support	52D	Ordnance	3,328
Combat support	52E	Ordnance	197
Combat service support	52F	Ordnance	143
Combat service support	52X	Ordnance	212
Combat support	54B	Chemical	5,641
Combat service support	55B	Ordnance	2,568
Combat service support	55D	Ordnance	1,005
Combat service support	57E	Quarterms	658
Combat service support	62B	Ordnance	2,143
Combat support	62E	Engineer	1,584
Combat support	62F	Engineer	365
Combat support	62H	Engineer	117
Combat support	62J	Engineer	836
Combat support	62N	Engineer	480
Combat service support	63B	Ordnance	11,143
Combat service support	63D	Ordnance	816
Combat service support	63E	Ordnance	1,720
Combat service support	63G	Ordnance	458
Combat service support	63H	Ordnance	3,302

Table C.1—continued

Category	MOS	Branch	MOS Population
Combat service support	63J	Ordnance	1,180
Combat service support	63S	Ordnance	2,894
Combat service support	63T	Ordnance	2,724
Combat service support	63W	Ordnance	3,317
Combat service support	63Y	Ordnance	678
Combat service support	63Z	Ordnance	406
Combat support	67N	Aviation	455
Combat support	67R	Aviation	1,522
Combat support	67S	Aviation	859
Combat support	67T	Aviation	3,379
Combat support	67U	Aviation	1,823
Combat support	67V	Aviation	317
Other	67Y	Aviation	268
Combat support	67Z	Aviation	461
Combat support	68B	Aviation	622
Combat support	68D	Aviation	471
Combat support	68F	Aviation	566
Combat support	68G	Aviation	630
Combat support	68H	Aviation	342
Combat support	68J	Aviation	630
Combat support	68K	Aviation	212
Combat support	68N	Aviation	665
Combat support	68X	Aviation	966
Combat service support	71D	Adj Gen	1,615
Combat service support	71G	Surg Gen	883
Combat service support	71L	Adj Gen	10,218

Table C.1—continued

Category	MOS	Branch	MOS Population
Combat service support	71M	Adj Gen	1,274
Combat service support	73C	Finance	2,014
Combat service support	73D	Finance	664
Combat service support	73Z	Finance	123
Combat support	74B	Signal	2,638
Combat support	74C	Signal	2,741
Combat support	74G	Signal	397
Combat support	74Z	Signal	120
Combat service support	75B	Adj Gen	3,466
Combat service support	75F	Adj Gen	764
Combat service support	75H	Adj Gen	7,745
Combat service support	76J	Surg Gen	1,507
Combat service support	77F	Quarterms	7,710
Combat service support	77L	Quarterms	138
Combat service support	77W	Quarterms	814
Combat support	79S	Other (RR)	722
Combat support	81L	Engineer	304
Combat support	81T	Engineer	329
Combat arms	82C	Field Arty	934
Combat support	82D	Engineer	128
Combat service support	88H	Transp	1,651
Combat service support	88K	Transp	574

Table C.1—continued

Category	MOS	Branch	MOS Population
Combat service support	88M	Transp	10,429
Combat service support	88N	Transp	1,494
Combat service support	88Z	Transp	291
Combat service support	91A	Surg Gen	734
Combat service support	91B	Surg Gen	15,640
Combat service support	91C	Surg Gen	3,646
Combat service support	91D	Surg Gen	1,257
Combat service support	91E	Surg Gen	1,834
Combat service support	91K	Surg Gen	2,198
Combat service support	91M	Surg Gen	546
Combat service support	91P	Surg Gen	1,141
Combat service support	91Q	Surg Gen	705
Combat service support	91R	Surg Gen	936
Combat service support	91S	Surg Gen	617
Combat service support	91T	Surg Gen	486
Combat service support	91V	Surg Gen	381
Combat service support	91X	Surg Gen	844
Combat service support	92A	Quarterms	13,091

Table C.1—continued

Category	MOS	Branch	MOS Population
Combat service support	92G	Quarterms	10,406
Combat service support	92M	Quarterms	396
Combat service support	92R	Quarterms	1,527
Combat service support	92Y	Quarterms	12,396
Combat service support	92Z	Quarterms	135
Combat arms	93B	Aviation	94
Combat service support	93C	Aviation	1,187
Combat arms	93F	Field Arty	259
Combat service support	93P	Aviation	1,777
Combat support	95B	Mil Police	15,176
Combat support	95C	Mil Police	1,056
Combat support	95D	Mil Police	468
Combat support	96B	Mil Intel	3,025
Combat support	96D	Mil Intel	826
Combat support	96H	Mil Intel	244
Combat support	96R	Mil Intel	764
Combat support	96U	Mil Intel	157
Combat support	96Z	Mil Intel	34
Combat support	97B	Mil Intel	1,282
Combat support	97E	Mil Intel	949
Combat support	97G	Mil Intel	261
Combat support	98C	Mil Intel	2,274
Combat support	98D	Mil Intel	225
Combat support	98G	Mil Intel	2,979
Combat support	98H	Mil Intel	633
Combat support	98J	Mil Intel	763
Combat support	98K	Mil Intel	577
Combat support	98Z	Mil Intel	250

D. Illustration of the Impact of Current Army PERSTEMPO on Army Forward Basing and Deployment

This appendix provides an illustrative analysis of one aspect of the impact of changes in PERSTEMPO on Army personnel and their careers. How many overseas tours and how many deployments could an Army enlisted person expect during the Cold War, and how many can that person now expect given the increased peacetime operations of the post–Cold War era? The analysis is based on readily available data. In some instances, as we describe below, the available data were more limited than necessary for a careful analysis. Thus, the analysis should be taken as illustrative.

We selected two years to analyze and compare. The year 1985 is used as illustrative of the Cold War era; 1995 is selected for the post-Cold War era.[61]

Inventory Data

Figure D.1 shows the end FY95 distribution of 421,415 Army enlisted personnel by years of service. Note that the enlisted YOS distribution used for both 1985 and 1996 is an average of the Army enlisted YOS distributions from fiscal years 1987 to 1990. We constructed this average to dampen the effects of the drawdown, which had resulted in a more senior year of service distribution for 1995 than had been the historical average.[62]

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[61]September 1995 is used to avoid Operation Joint Endeavor. A larger proportion of forward-based troops (especially in Germany) were deployed for OJE than for other operations during the post–Cold War period.

[62]In FY85, 16.4 percent, 16.3 percent, and 13.9 percent of the Army enlisted force was in the first, second, and third years of service, respectively. In 1995, those percentages were 11.4, 10.7, and 11.5, respectively. The drawdown had retained proportionately more senior personnel. We therefore used as our YOS an average of the distributions from 1987 to 1990. Those distributions in the first three years of service, which were more in line with historical averages, were 14.5 percent, 14.7 percent, and 12.6 percent, respectively.

Figure D.1—Active Army Enlisted Years of Service Distribution for FY 1995

Figure D.2 apportions Army FY 95 end strength into three categories—forward based, deployed, and available—and arrays them by years of service (YOS). The data for each category are not actual data, but are distributed into these categories according to the assumption we make about the distribution of each category into year-of-service groups (see Table D.1). That assumption is that forward-based and deployed personnel tend to be more junior than forces in CONUS because such forces are comprised of operational TOE units; CONUS forces have a higher proportion of more-senior headquarters.

Table D.1

Active Army Enlisted Year of Service Distributions by Category
(%)

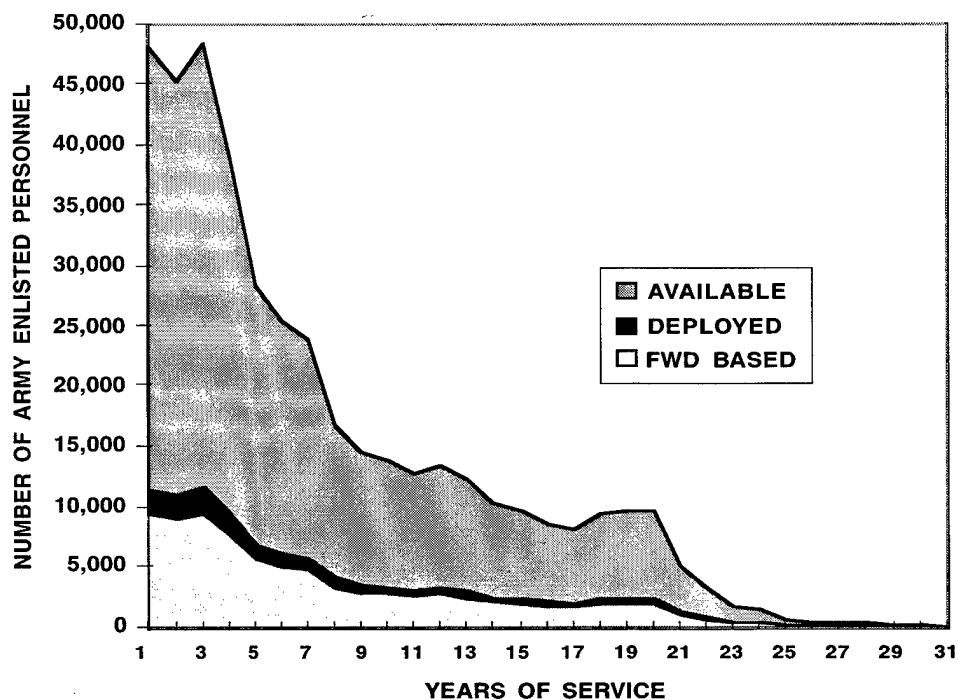|	Forward Based	Deployed	Available
FY95 YOS 1–4	55	50	39
YOS 5–10	30	30	28
YOS 11+	15	20	33
FY85 YOS 1–4	55	50	54
YOS 5–10	30	30	25
YOS 11+	15	20	21

Figure D.2—Active Army Enlisted Deployments by Years of Service for FY 1995

Forward-based personnel (83,500) are those outside the United States on September 30, 1995, who were not on a deployment.[63] The personnel in Korea (23,000) are assumed to be serving one-year tours; the remaining 60,500 are assumed to be serving three-year tours.

Deployed personnel (18,200) are those designated by the Army as "deployed."[64] Available personnel (342,715) are derived as the difference between endstrength (421,415) and those deployed and forward-based.

Figures D.3 and D.4 show similar data for the 661,149 enlisted personnel in FY85.

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[63]Forward-based data were derived from *Fiscal Year 1995 Selected Manpower Statistics,* subtracting out those personnel on deployments.

[64]The 18,200 figure is taken from an Army ODCSPER brief which provides data for Army Forces Deployed Worldwide, October 1993 to June 1996.
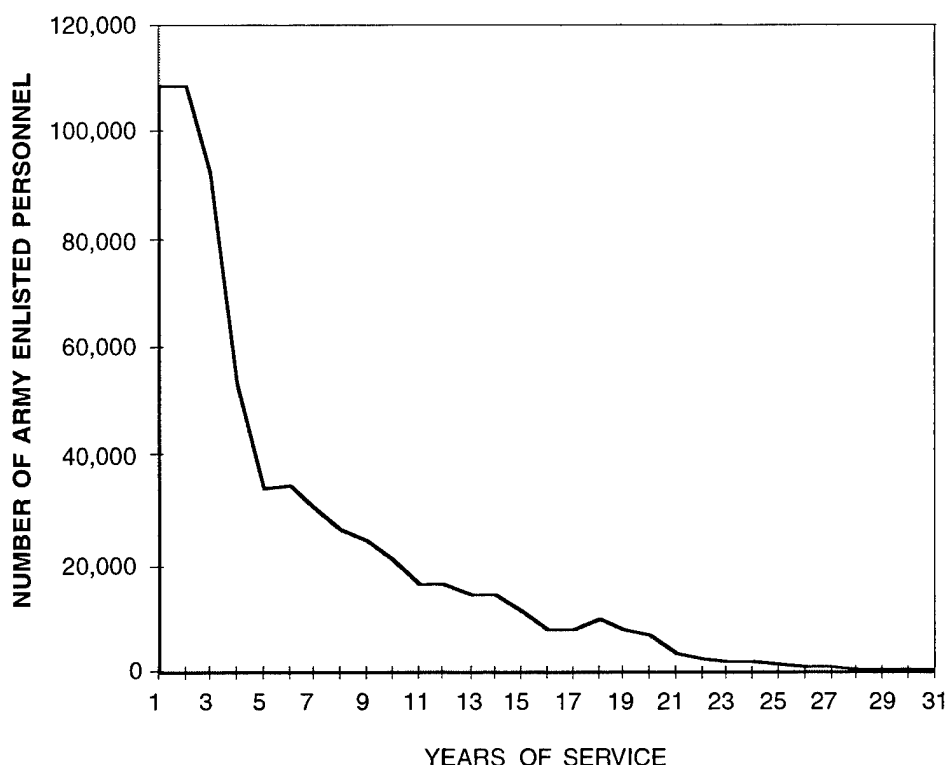
Figure D.3—Active Army Enlisted Years of Service Distribution for FY85

Forward-based (216,000) personnel are those outside the United States in FY85[65] and the deployed (4275) is an estimate based on other studies.[66] The available number of personnel is once again defined as endstrength minus forward-based and deployed personnel. We also use the same assumption about the distribution of forward-based and deployed enlisted personnel into year-of-service groups (see Table D.1).[67] Given the disproportionate drawdown in

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[65]Fiscal Year 1985 Selected Manpower Statistics.

[66]The Army CAA Force Employment Study tracked Army deployments from 1975–1989. Since the deployments vary significantly from year to year, we use an average across those years of 6070 active Army personnel, and further assume that 85 percent of those are enlisted, to arrive at the 4,275 number. Note that deployment data were not well documented in the Cold War era.

[67]The Army was more junior overall in FY85 than in FY95. We held constant the seniority distributions for the YOS categories in Table D.1 for forward-basing and deploying forces, which means the YOS category "available" (in CONUS) absorbs the junior soldiers.
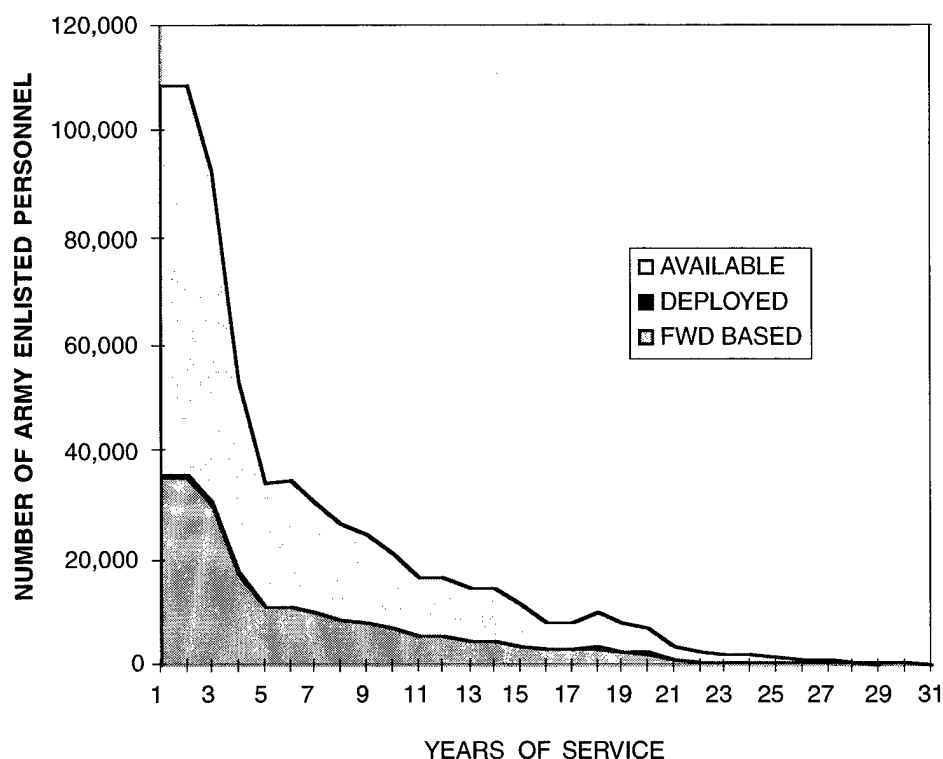
Figure D.4—Active Army Enlisted Deployments by Years of Service for FY85

Europe versus Korea and in the junior ranks, this distribution may have changed in the 1990s. Since the scope of this project precluded direct measurement of the distribution in 1985 and 1995, we elected to hold it constant. To the extent that the drawdown raised the seniority of personnel deployed, our results underestimate the number of deployments senior personnel might have expected in 1995 relative to 1985.

Effect on Individual Careers

Of interest to decisionmakers is the impact on individuals of changes in PERSTEMPO.[68] In this case, we examine changes both in deployments and in forward basing. Deployments of soldiers increased several-fold from 1985 to 1995, from an average of 4275 in FY85 to an average of 18,200 in FY95. Currently,

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[68]While TEMPO, or OPTEMPO, traditionally refers to deployments, overseas basing is another kind of personnel movement that we include in our definition of TEMPO. The increasing number of two-career families, and the issue of providing educationally for dependent children, are two reasons to take interest in the amount of time a service person has to spend overseas—a move that is typically difficult both for a spouse with a second career and for children and their schooling.

forward basing has decreased substantially, with 216,000 soldiers "outside the U.S."[69] in FY85 and only 83,500 in FY95.[70]

We examine the impact of changes in Army deployments and forward basing of Army soldiers from FY85 to FY95 on the number of tours that an enlisted individual can expect in a 20-year career.

The underlying spreadsheet model calculates average statistics for soldiers in the force. The model is a simple, expected-value spreadsheet model that takes into account that Korean tours are different than typical three-year tours overseas, and takes into account that forward-based forces tend to be more junior than CONUS-based forces. The model treats every soldier the same, and does not account for higher demand for certain skills and other differentiation among service members. Therefore, results do not capture the range of impacts that any one soldier might experience.

To simplify the analysis, we will assume that there are two types of forward-based tours. The "short" forward-based tour is one year long and applies to those soldiers serving in Korea. The "long" forward-based tour is three years in length and applies to everyone forward-based who is not serving in Korea. All deployments are assumed to be six months in length. Also, we will assume retention patterns implied by the data for each year to be in a steady state. We will initially treat deployed as exclusive of forward basing to simplify this analysis. In reality, one could deploy from any location and we will later relax this assumption.

Given the data and the assumption, the following assessments are made for career patterns over a 20-year period. Figure D.5 shows forward basing in terms of the change in the number of long (three year) tours that an Army enlisted person could expect in a 20-year career in FY85 and FY95. Figure D.6 shows forward basing in terms of the change in the number of Korean (one year) tours that an Army enlisted person can expect. Figure D.7 shows deployments in terms

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[69]This figure excludes those deployed overseas.

[70]The proxy used for forward basing is the number of soldiers outside the U.S., less those deployed. Data are from *Selected Manpower Statistics*.
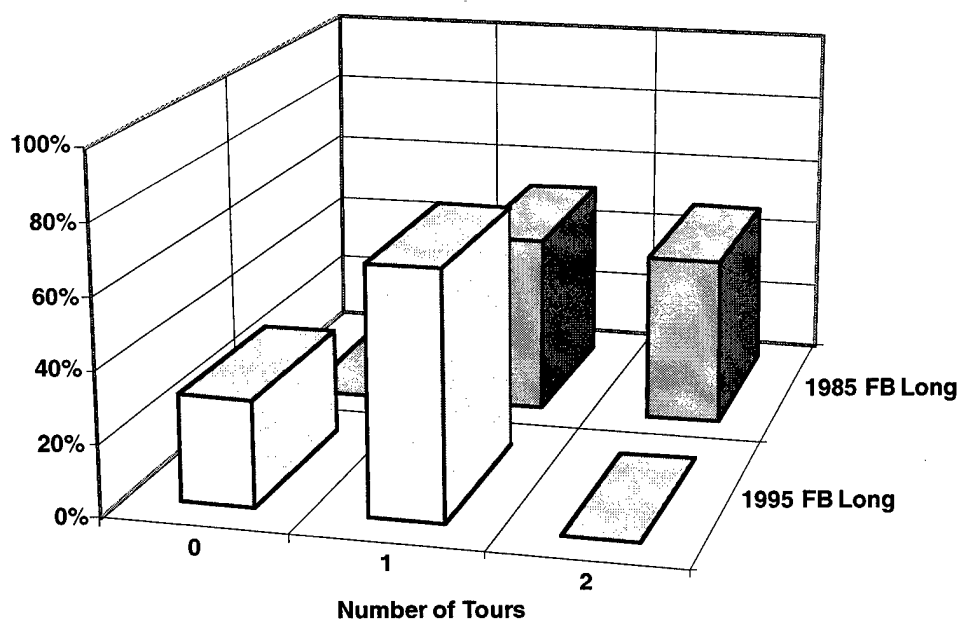
Figure D.5—Forward-Based Long (three-year) Tours in a 20-Year Army Enlisted Career

of the number of six-month deployments that an Army enlisted person can expect within a 20-year career, in FY85 and FY95. Figure D.8 shows a summary of how the total amount of time spent in forward basing and deployments can change with various end strengths and how the composition of that time between periods with family and away from family can change.

First, in terms of forward-basing or long tours, soldiers over a 20-year career could expect to have more three-year tours in FY85 than in FY95 (see Figure D.5). Based on our assumptions, we find that in 1985, about half of the soldiers faced two three-year tours and half faced one three-year tour. In 1995, no one would expect to serve two three-year tours; in fact, 20 percent have no three-year forward basing tour at all. In general, soldiers are forward basing less than in the Cold War Army.

Second, regarding short (one-year Korean) tours overseas, in both 1985 and 1995, the bulk of soldiers serve one (one-year) Korean tour (see Figure D.6). During
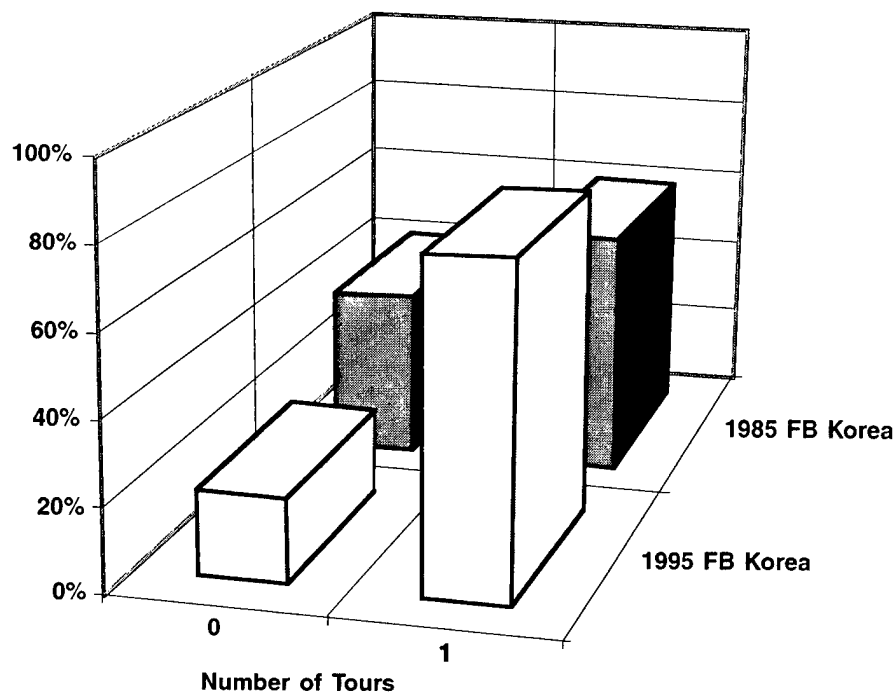
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Figure D.6—Forward Based Korean (one-year) Tours in a 20-Year Army Enlisted Career

that time frame, end strength has come down by one-third, while Korean basing has been reduced only slightly. This reduction results in a larger proportion of soldiers doing Korean tours in 1995 than in 1985.

Finally, with respect to deployments, soldiers are facing more six-month deployments in 1995 than in 1985 (see Figure D.7). The bulk of Army soldiers had no six-month deployments in 1985. By 1995, the increase in deployments, combined with the reduction in end strength, means that most soldiers have one six-month deployment during a 20-year career.

Three additional assumptions are made to create the data shown in Figure D.8. These assumptions (and our model) are for enlisted personnel. First, all deployed time and 15 percent of long forward-based tours (three-year tours)[71] are considered as unaccompanied and counted as time away from home or

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[71]The 15-percent figure takes into account that not all soldiers based overseas are married.
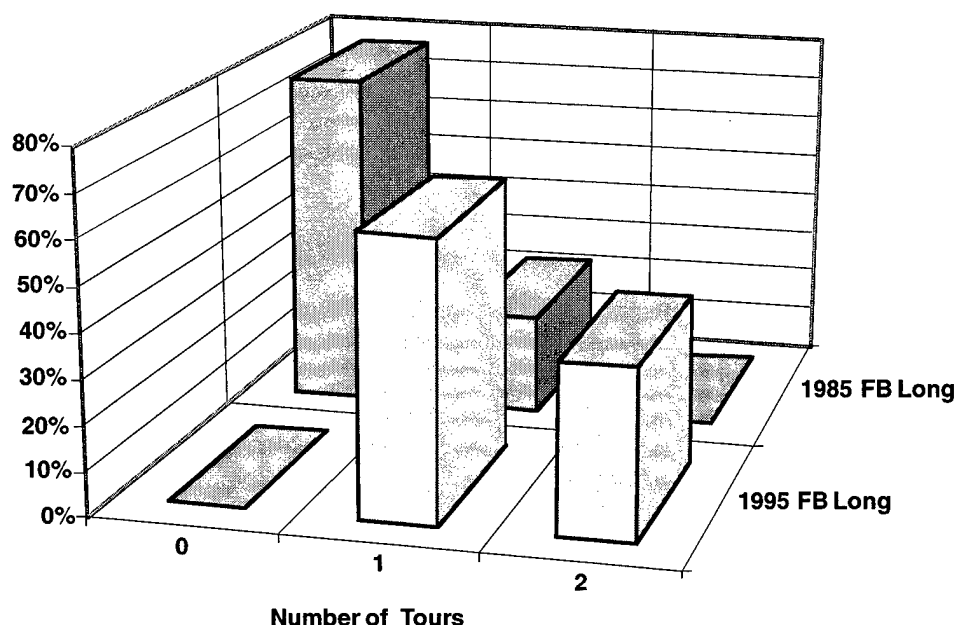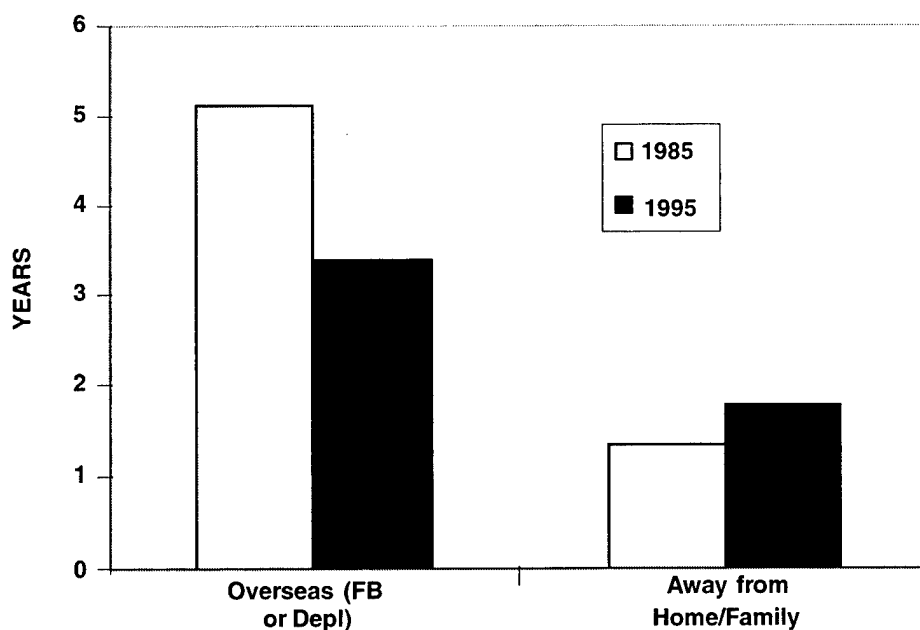
Figure D.7—Deployments in a 20-Year Army Enlisted Career

family. Second, to eliminate a previous assumption that the two types of assignments exclude one another, we counted 25 percent of deployed time as coming from those forward-deployed. Third, we assume that 99 percent of Korean tours for enlisted personnel are unaccompanied.

As shown in Figure D.8, the amount of time spent overseas over a 20-year career has decreased between FY85 and FY95, from approximately 5 years to approximately 3.5 years. On the other hand, time away from family has increased, by roughly one-half of a year.

Conclusions

We examined two different time periods to evaluate the impact of changes in Army PERSTEMPO (defined as either forward basing or deployments) on Army soldiers, and the time away from home they can expect in a 20-year career. For

Figure D.8—Expected Time Overseas or on Deployment in a 20-Year Army Enlisted Career

the data we used and the assumptions we made,[72] our assessment is that soldiers are spending fewer tours forward-based and more tours deployed in FY95 than in FY85. The result is that in 1995, they spend less time overseas and more time away from family, compared with 1985.

A critical question is whether such changes—less time overseas, but more time away from family—are preferred by those considering future careers in the Army. That is, in an era of two-income families and general desire for geographical stability, is the ability to keep families in place, and deploy soldiers away from home for shorter periods of time, a preferred option?

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[72]Once again, the model treats every soldier the same, and does not account for higher demand for certain skills and other differentiations among service members. Therefore, the results do not capture the range of impacts that any one soldier might experience.

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