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Logistics Support for Deployed Military Forces

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The Congress of the United States ■ Congressional Budget Office

Notes

Numbers in the text and tables of this study may not add up to totals because of rounding.

Unless otherwise indicated, all dollar amounts are in 2005 dollars and all years are fiscal years.

Preface

The U.S. Army uses a mix of uniformed military personnel, federal civilian employees, and contractors to support its deployed combat forces. Over the past three years, more than $15 billion of logistics support (including such services as base-camp construction, food, fuel, housing, and supplies) has been provided to the Army in Iraq, Afghanistan, and elsewhere in Southwest Asia under contract.

This Congressional Budget Office (CBO) study—prepared at the request of the Senate Committee on Armed Services—evaluates alternative mixes of military personnel, federal civilians, and contractors that could support the Army's deployed combat forces. The study analyzes four options that would vary the mix among the three labor categories, affecting the provision of logistics support as well as the maintenance of weapon systems in the wartime theater. CBO evaluates the four options on the basis of their cost, flexibility, and legal considerations. In keeping with CBO's mandate to provide objective, impartial analysis, this study makes no recommendations.

Matthew Goldberg coordinated the preparation of this study, under the supervision of J. Michael Gilmore. The research was conducted by Adebayo Adedeji, Daniel Frisk, Carla Tighe Murray, and R. Derek Trunkey. David Newman performed most of the cost analysis, under the supervision of Jo Ann Vines. Frances Lussier contributed to the analysis, and Eric Labs and Allison Percy provided additional assistance. Ed Harris, Arlene Holen, and Elizabeth Robinson (formerly of CBO) provided helpful comments. Robert Murphy reviewed the section on legal issues, as did Jennifer Elsea of the Congressional Research Service. Stanley Horowitz of the Institute for Defense Analyses reviewed the entire study. (The assistance of external reviewers implies no responsibility for the final product, which rests solely with CBO.)

Christine Bogusz and Loretta Lettner edited the study, and Christian Spoor proofread it. Cindy Cleveland produced drafts of the manuscript and prepared the tables. Allan Keaton prepared the report for publication, and Andrew Hemstreet of Art Services, Inc., and Maureen Costantino produced the cover. Lenny Skutnik printed the initial copies, and Annette Kalicki and Simone Thomas prepared the electronic version for CBO's Web site (www.cbo.gov).

Douglas Holtz-Eakin
Director

October 2005

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Summary

Although the U.S. military fights wars using uniformed troops, it also has a long history of using contractors and federal civilians to support its troops on the battlefield.[1] Currently, the U.S. Army purchases logistics support (which consists of services such as base-camp construction, food, fuel, housing, and supplies) in Iraq, Afghanistan, and elsewhere in Southwest Asia through a contract known as the Logistics Civil Augmentation Program (LOGCAP). The Army awarded the current LOGCAP contract to Kellogg, Brown & Root in December 2001. During the ensuing three years, the estimated cost of the various task orders under LOGCAP exceeded $15 billion. As of December 2004, LOGCAP employed 44,000 people (including foreign nationals and subcontractors).

This study by the Congressional Budget Office (CBO) examines the mix of military personnel, contractors, and federal civilians that support deployed forces, concentrating on the U.S. Army. The report discusses the advantages and disadvantages of each labor category. CBO expects that a mix of all three will continue to be used for the foreseeable future, but some adjustments may be made to that mix. Consequently, this analysis looks at four alternatives for providing logistics support, each using a different distribution of the three types of employees.

The study focuses on the current mix of personnel in Southwest Asia. The U.S. Central Command's (CENTCOM's) area of responsibility includes operations in both Iraq and Afghanistan as well as U.S. troops stationed in adjoining countries, such as Kuwait and Uzbekistan. CENTCOM reports that there were about 220,000 U.S. troops in its area of responsibility, on average, during calendar year 2004. That total includes 155,000 Army soldiers (National Guard and Reserve as well as active-duty Army), of which about 67,000 were providing logistics support. CENTCOM also reports an average for 2004 of about 18,000 contractors (including only U.S. nationals working overseas, not host-country or third-country nationals) and 3,500 federal civilians (including personnel from the Department of Defense, or DoD, and other federal agencies supporting military operations as well as reconstruction activities).[2]

CBO's analysis addresses three considerations associated with using different types of personnel: cost, flexibility, and legal issues.

Cost

Cost is a major distinguishing factor among the alternative mixes of military personnel, contractors, and federal civilians examined in this analysis. A comprehensive comparison of the three groups' respective compensation packages is difficult to make, however, because pay is only a portion of total compensation. For example, according to CBO's estimates, current cash compensation constituted, on average, only 43 percent of the total compensation package of active-duty military personnel in 2002.[3] The remainder—actually the largest part of the total dollar value—consisted of other elements, such as deferred cash compensation (mostly retirement pay), services provided in-kind at military installations (such as commissaries, housing, and child care), and both current and deferred health care (the latter including care provided in both military and veterans' hospitals). CBO performed a

1. Throughout this study, "federal civilians" refers to nonuniformed employees of the Department of Defense (DoD) or other federal departments or agencies. "Contractors" refers to employees of private U.S. corporations, specifically those that support DoD or other departments or agencies (such as the Department of State) in conducting warfare or postwarfare reconstruction activities. In some instances, which will be clearly noted, contractors may include not only U.S. citizens but also host-country nationals (citizens of the country in which the work is being performed) and third-country nationals (citizens of neither the United States nor the host country). Contractors may also include employees of U.S. or foreign corporations who act as subcontractors to the prime contractor that holds the contract to support a federal department or agency.

2. Other government sources have compiled estimates of the number of federal civilians that may differ.

3. Congressional Budget Office, *Military Compensation: Balancing Cash and Noncash Benefits* (January 16, 2004).

detailed analysis to convert those elements of military compensation to a current cash-equivalent basis. A similar accounting of total compensation for contractors and federal civilians is not readily available because, for example, existing information is not adequate to associate overhead costs (for items such as computers, office space, or a portion of supervisors' salaries) with individual federal workers.

Even a complete accounting of compensation would yield an incomplete picture, though, for several reasons. First, there may be productivity differences between the labor categories. That means that a given number of military personnel could be replaced by a different number of contractors or federal civilians. Moreover, person-to-person productivity is not the only factor determining the size of the workforce required to perform a given task. The Army is organized into large defined units that cannot always be scaled down into modular subunits to carry out a particular task. The size of the Army's workforce is also influenced by the Army's requirement to maintain a training and rotation base (for the recuperation and training of units) as well as a headquarters structure (to coordinate the activities of the personnel actually performing the task).

Training and Rotation Base

The Army recruits mostly high school graduates and trains them to perform the required tasks. Extended deployments compete with training opportunities and also keep soldiers separated from their families for long periods. To manage those problems, which may affect whether soldiers decide to reenlist, Army units rotate back to the United States to recuperate from deployments, reconstitute their personnel and equipment, and train for their next deployment. Rotation provides soldiers in those units with a respite from the pace and dangers of deployment as well as an opportunity to spend more time in training and with their families.

Thus, to estimate the cost of any alternative mix of personnel requires consideration of the rotation base needed to support extended deployments. In the four options examined in this study, CBO considers the *incremental* cost of military personnel, contractors, and federal civilians. The incremental cost is measured against a baseline consisting of the costs that would have been incurred under current practice. For example, the Army's peacetime budget already funds the basic pay and peacetime allowances of active-duty military personnel and the routine costs of peacetime training exercises and regular equipment maintenance for existing Army units. Incremental costs are measured as those over and above that baseline.

The Army's current policy goals imply that, in principle, each deployed billet (authorized space) in the active Army is matched by at least two billets in the rotation base, and each deployed Reserve or Guard billet is matched by an average of 6.5 rotational billets. In CBO's calculations, therefore, the direct personnel cost of having a soldier fill a deployed billet to perform a logistics task would be multiplied by roughly the ratio of total billets (deployed plus rotational) to deployed billets (that is, by a factor of 3:1 for active-duty soldiers or a factor of 7.5:1 for Reserve or Guard members). However, not all of those costs are incremental. If soldiers replaced contractors in performing any function, some staffed units might already exist in the Army's force structure to perform the function, and additional staffed units might be available to populate a portion of the rotation base.

In sum, the incremental costs of existing units are the costs of contingency operations (any crisis or conflict that might arise) over and above the costs of routine peacetime operations. But the incremental costs of the new units that would have to be added to the force structure are more extensive. They include the costs of acquiring the personnel and equipment to establish the units, the routine operating costs of those units during peacetime, and their contingency operations costs during wartime.

Headquarters Elements

Federal civilians working within the military's unit structure—whether in the United States or when deployed overseas—report up through the military chain of command in the same way that military personnel do. However, DoD civilians generally are not organized into deployable all-civilian units in the way that military personnel are organized into platoons, companies, and battalions; there are only a few isolated examples of purely civilian units with their own command structure.

In developing an option in which soldiers organized into Army units would perform many of the logistics functions currently under contract (Option 1 in this analysis), CBO added headquarters elements to coordinate the activities of the discrete Army units that would perform each individual function (firefighting team, supply company, and so forth). The same degree of coordination would be necessary if federal civilians rather than Army

units performed many of the contractor's functions (as detailed in Option 2 in this analysis). Although the current civil service structure contains similar management personnel, they are not necessarily qualified to lead an operational unit into the field during hostilities. As a consequence, DoD would have to recruit and train people for the operational leadership positions.

Flexibility

Compared with the regulations under which the Army employs military personnel or federal civilians, the regulations under which contractors work generally give them more flexibility in setting pay and benefits and in hiring and firing workers. Because contractors need not make long-term commitments to their employees, they are in a better position to "surge" to meet a short-term demand for workers and then rapidly downsize later. Contractors are not bound by military or civil service pay tables or by legislative caps on various types of special pay and allowances, although some contractors may offer limited benefits.

Contractors also may require their employees to deploy overseas for extended periods. They may choose to compensate those employees for the dangers involved and the extended separation from their families, or they may simply accept a higher turnover rate and replenish their workforce when necessary. And unlike the Army, contractors often make lateral hires of fully trained personnel. For both of those reasons, contractors do not need to maintain—and the government may not need to pay for—an extensive training establishment or rotation base in the United States. Because many contractor personnel (especially those who maintain weapon systems) are military veterans, they have already been trained.

Contractors might also be able to deploy to the wartime theater more rapidly than could support units from the Army Guard and Reserve (collectively, the "reserve component"), which contain two-thirds of the Army's logistics personnel. During Operation Desert Shield (from August 7, 1990, through January 16, 1991), reserve-component units that were activated to support active-component combat forces did not arrive in-theater until about 200 days after the operation began.[4] Response times improved during Operation Iraqi Freedom: the average lag between activation of reserve-component units and their arrival in-theater was 158 days for full battalions and about 60 days for smaller detachments. By contrast, the LOGCAP contract requires that performance begin as early as 15 days after the Army notifies the contractor to proceed with a particular task order. Although the LOGCAP contractor has not always met that goal, it has generally responded faster than Army reserve-component units. The contractor may be able to respond more rapidly because the process of activating reserve-component units, including predeployment medical and dental examinations, is time-consuming. In addition, Army units generally transport their own equipment to the wartime theater, often via strategic sealift ships, whereas the contractor may be able to purchase much of the required equipment (such as trucks) in the theater itself or in adjoining countries.

A disadvantage of using contractors is that the contracts themselves may be inflexible, requiring military commanders to issue change orders to support contracts for even minor shifts in tasks.

Legal Issues

Military personnel, federal civilians, and contractor employees have different command-and-control mechanisms and different legal status.

Command and Control

Military personnel are under the direct command and control of military commanders, and they are subject to criminal punishment for failing to obey a lawful order. Federal civilians may be under the control of military commanders permanently or temporarily during a conflict, but they would probably be subject only to administrative actions, such as reassignment or termination, if they failed to obey an order. The rights and duties of contractor employees are set forth in their particular contract with the government and more generally in the Federal Acquisition Regulations. A military commander can influence the contractor employees' behavior through the contracting officer and the contractor's desire to satisfy

4. Congressional Budget Office, *Structuring the Active and Reserve Army for the 21st Century* (December 1997), p. 22.

the customer, but the commander has limited direct control over any one employee.[5]

DoD designates certain of its civilian employees as "emergency-essential," and those employees may be sent overseas—even involuntarily—during a crisis or conflict. Those who refuse to deploy are subject to administrative disciplinary action, including removal from federal service.

Military commanders have less control over civilians and contractors than over military personnel who commit crimes during a contingency operation. Retired military personnel may remain under the jurisdiction of the Uniform Code of Military Justice (UCMJ) in their new roles as federal civilians or contractors, in which case they would be subject to court-martial for offenses committed even after their period of active-duty service. Other civilians and contractors are subject to the UCMJ only when they participate in a declared war, but not during undeclared wars or other contingency operations.

Legal Status

Military personnel, except for medical personnel and chaplains, usually qualify as combatants under the Geneva Conventions, meaning that they are legitimate military targets for enemy forces but that they would be given prisoner-of-war status if captured. They also have some immunity from prosecution for hostile actions taken during combat.

In contrast, many federal civilians and contractors would qualify as noncombatants if they took no active part in hostilities, and they would not be legitimate military targets of enemy forces. Of course, they might be injured or killed during a military action against a legitimate target.

The legal status of federal civilians and contractors performing functions closely linked to military operations—such as intelligence, weapon systems maintenance, and resupply of forward-based forces—is less certain. Those personnel could be deemed to have taken an active part in hostilities. If so, they might not meet the definition of either noncombatants or lawful combatants, placing them at risk that enemy forces would declare them illegal combatants. They might still be granted some detainee protections if captured, but they could become legitimate targets and could also be prosecuted for actions taken during hostilities.

The distinction between combatant, noncombatant, and illegal combatant for personnel working for the U.S. military may not be important for a conflict like the current operation in Iraq. Since the end of major combat operations on April 30, 2003, insurgency forces have not been following the laws of armed conflict; for example, they have detonated explosives in public areas that are as likely to kill noncombatants (including Iraqi civilians) as combatants. In fact, noncombatants may be at greater risk because they are more vulnerable. Both U.S. contractors and federal civilians require protection in hostile areas. Either group may be armed in some circumstances, but both ultimately rely on the Army combat units they support to protect them.

Options

CBO considered four options that would change the mix of military personnel, contractors, and federal civilians providing various types of support to deployed Army forces (see Summary Table 1).

Option 1: Rely More on Uniformed Military Personnel to Perform Logistics Support

One approach would be to rely on a mix of active-duty and reserve military personnel to perform the role currently played by U.S. contractor personnel in LOGCAP. To quantify that option, CBO analyzed Task Order 59, the largest of the LOGCAP task orders (comprising functions such as base-camp operations and food services for up to 130,000 troops) associated with Operation Iraqi Freedom.[6] Specifically, CBO compared the costs of that task order with estimates of the incremental costs of having uniformed soldiers provide those same functions. CBO's analysis considered both the LOGCAP contractor's and the Army's costs of sustaining during peacetime the capabilities required to provide logistics support

5. The Government Accountability Office (formerly the General Accounting Office) has determined that "DoD and the [military] services have not identified those contractors that provide mission essential services . . . [nor] developed backup plans to ensure that essential contractor-provided services will continue if the contractor for any reason becomes unavailable." See General Accounting Office, *Military Operations: Contractors Provide Vital Services to Deployed Forces but Are Not Adequately Addressed in DoD Plans*, GAO-03-695 (June 2003).

6. As of December 2, 2004, Task Order 59 employed 51 percent of LOGCAP employees worldwide (including foreign nationals and subcontractors).

Summary Table 1.

Alternatives to the Current Mix of Military Personnel, Federal Civilians, and Contractors Examined in This Analysis

	Replace:	With:
Option 1	Deployed logistics (LOGCAP) contractor personnel	Active and reserve Army units
Option 2	Deployed logistics (LOGCAP) contractor personnel	Department of Defense civilians
Option 3	Deployed system contractors (technical representatives)	Department of Defense civilians
Option 4	Active-duty personnel (some of whom are deployed) performing logistics, installation and facility management, and physical security functions	Contractors who have a military reserve affiliation

Source: Congressional Budget Office.

Note: LOGCAP = Logistics Civil Augmentation Program.

during wartime. In particular, CBO assumed that the Army would maintain a rotation base in the United States for returning units; some units in the rotation base do not exist and would have to be created.

To compare the cost of using the LOGCAP contractor and the cost of using Army support units, CBO had to make assumptions about the frequency, duration, and spacing of wartime conflicts. The notional scenario that CBO developed alternates five-year wartime periods with five-year peacetime periods over a total horizon of 20 years. CBO also examined seven other scenarios and determined that its major findings hold true regardless of the specifics of the selected scenario.

In CBO's estimation, when only the wartime periods are taken into account, the Army's support units could perform the tasks in the largest LOGCAP task order for virtually the same cost as the contractor. However, that outcome changes when the peacetime periods are considered. The contractor's peacetime costs—primarily to maintain its management support plans and its vendor database—amount to only a few million dollars per year. By contrast, CBO assumed that the Army would maintain a rotation base consisting of about 80 existing support units plus nearly 800 new support units. The costs to acquire the new units and to conduct routine training and other operations with both new and existing units would be substantial. Therefore, including both the wartime and peacetime costs, the Army's total cost would be about 90 percent higher than the contractor's cost under Task Order 59, CBO estimates. Also, some aspects of the quality of service, such as the comfort of living quarters, are probably higher under LOGCAP than they would be if the Army provided the same services. CBO attempted to adjust for quality whenever possible in its cost analysis, but some differences may remain.

Option 2: Rely More on Federal Civilians to Perform Logistics Support

This option would rely on federal civilians to perform the role currently played by U.S. contractor personnel in LOGCAP. Instituting this option would probably require making significant changes to the civil service system. Because the ramifications of those changes are unknown and their details are difficult to define, CBO's analysis discusses this option in qualitative terms rather than providing a detailed cost estimate.

Federal civilians offer several advantages over contractor personnel. Unlike contractors, federal civilians are allowed to perform inherently governmental tasks, such as policymaking and contracting. In addition, civilians of the appropriate pay grade may operate as equal members of a military staff. Federal civilians fall under the supervision of higher-ranking military or civilian officials; in turn, they may supervise lower-ranking military or civilian personnel.

Despite those advantages, using federal civilians to replace contractor personnel broadly on a large-scale logistics contract such as LOGCAP would present many obstacles. Most of those obstacles derive from the requirements of the civil service system, which could be overcome only through significant changes to civil service policies and practices. Some of those requirements may

be eliminated by DoD's new National Security Personnel System, but that system has not yet been implemented and its effectiveness remains unknown.

One obstacle to using federal civilians is the process that agencies must go through to hire new civil servants, a process that requires coordination between the hiring agency and the Office of Personnel Management. A second obstacle is that the General Schedule (GS), which determines the salaries of most civil servants, is relatively rigid. Thus, an employee at GS-11, step 5, earns the same salary regardless of whether he or she is a budget analyst or a geologist. Moreover, the federal government is more limited than contractors in the bonuses and other compensation tools it has available to attract skilled workers as quickly as may be required to support combat operations.

A third obstacle is that DoD civilians are generally not organized into deployable units with their own command structure and headquarters elements. The Army would need to establish those elements and maintain them even during peacetime so as to have them available when conflicts arose.

Finally, in terms of the training and rotation base required, this option lies somewhere between the current use of contractor personnel and the use of military personnel. Whereas the Army's culture discourages the lateral entry of senior military personnel, it does not discourage the lateral entry of trained civilians. Thus, the Army would not have to train civilians to the same degree that it does military personnel. Still, the Army might need to expand its training establishment in the United States to provide civilian logistics personnel with advanced and continuing training opportunities. Moreover, if federal civilians were expected to deploy with the same frequency and duration as military personnel, the Army might need to establish and maintain a rotation base in the United States to avoid retention problems stemming from protracted family separation.

CBO's detailed cost analysis of Option 1 (having military personnel replace the LOGCAP contractor) indicates that the need for a rotation base to support Army deployments is the main factor pushing up the Army's costs relative to those of the LOGCAP contractor. CBO did not conduct a similarly detailed analysis of the costs of using federal civilians. However, rotation-base considerations alone would tend to make this option more costly than using the LOGCAP contractor but potentially less costly than using Army logistics units.

Option 3: Substitute Federal Civilians for Deployed Contractors Who Support Weapon Systems

DoD maintains weapon systems in the United States using a mix of its own "organic" maintenance personnel (enlisted technicians assigned to operational units such as aircraft squadrons or artillery battalions), federal civilians and contractor personnel working at government depots, and contractor personnel working at their own commercial facilities. When the military deploys weapon systems overseas, it supplements organic maintenance personnel with small teams of some of the same civilians or contractors who helped maintain those systems in the United States. The contractors who provide that support are known as system contractors, and the personnel they employ are known as technical representatives, or "tech reps." Under this option, federal civilians would assume the entire responsibility for supplementing organic maintenance personnel and replace the contractor tech reps who currently deploy in that role. (This option is more limited in scope than Option 2, under which federal civilians would replace the considerably larger number of contractor personnel who provide large-scale logistics support under LOGCAP.)

CBO did not conduct a detailed cost analysis of this option. It determined that the range of base salaries among contractor tech reps roughly matches the base salaries of federal civilians with similar skills—those in grades GS-11 through GS-13. Comparing the total cost of services provided by contractors and by government agencies is difficult, however, because government cost data rarely extend beyond personnel costs. Contractors bill the government for a wider array of costs, including depreciated capital, building lease payments, managerial overhead, and insurance.

Costs incurred during deployment may not be the dominant factor in evaluating this option. Most system maintenance occurs in the United States, not during overseas deployments. Thus, the life-cycle maintenance costs of a weapon system are largely determined by peacetime considerations. The decision of who supports weapon systems during wartime depends on who has been maintaining them during peacetime. That decision is generally determined by the Army's broader acquisition strategy, including such factors as the time frame for fielding the system and the relative availability of skills. In some cases,

for example, the Army may be unable to retain enough maintenance personnel in its military or civilian workforce. In other instances, a system may be fielded in such small numbers, either initially or even in the long run, that developing an in-house maintenance capability is not cost-effective. By contrast, a potential disadvantage of using system contractors is that the Army may never develop the specific skills and experience necessary to support a particular system itself, should the need arise. Those kinds of considerations are more likely to determine how equipment and systems are maintained than are the relative cost of sending a limited number of people overseas to support deployed forces in the field.

Option 4: Establish a New Type of Military Personnel—Sponsored Reserves

This option would create a new labor category that blends the characteristics of contractor personnel and military reservists. Under this concept, individuals would work for U.S. defense contractors during peacetime but would also be members of the military reserves and would deploy as activated reservists during conflicts. Those individuals—which this study calls sponsored reservists—would differ from DoD's roughly 70,000 dual-status civilians (also known as military technicians) because they would work as contractors rather than as federal civilians during peacetime.

Under this option, contractors would agree to maintain a specified portion of their workforce as members of the Individual Ready Reserve. Those reservists do not participate in regularly scheduled training with reserve units (one weekend per month and an additional two-week period every year), but under this concept, they would remain proficient in their military specialty through a combination of their routine work as contractors and, if necessary, additional periodic training. A sponsored reservist would act as a contract employee during peacetime but would agree to be activated to military status when deploying to perform the same job overseas. Currently, many contractors also serve as reservists, but when they deploy as military personnel they do different jobs or work with different units than during peacetime. Under the sponsored-reserve concept, the contractor would perform the same job but would act as a member of the military when deployed.[7]

This option would gradually institute a program of sponsored reservists to reduce by 20 percent the total number of active-duty personnel providing logistics, installation or facility management, and physical security functions. Specifically, 20,000 active-duty personnel in those occupations would be replaced with sponsored reservists. That replacement would be phased in over four years, beginning in 2007. Some of the 20,000 affected personnel are currently deployed to the Iraqi or Afghan theaters, and some (presumably a smaller number) might remain deployed throughout the implementation period of the option. The effect of the option on forces in-theater would be to replace the deployed subset of the 20,000 active-duty personnel with activated sponsored reservists.

CBO views Options 1 and 4 as mutually exclusive alternatives because some of the logistics functions that Option 4 would transfer from active-duty personnel to the new sponsored reservists are the same functions that Option 1 would transfer from the LOGCAP contractor to uniformed military personnel (including those on active duty as well as traditional reservists).

Successfully converting 20,000 positions—and reducing active-duty end strength by that amount—could save DoD about $3 billion from 2007 through 2011.[8] Some of those savings would occur because sponsored reservists would undertake their military-specific responsibilities only when they deployed. During peacetime, sponsored reservists would have more time available to perform their jobs, so fewer of them could be substituted for a given number of active-duty military personnel.

The savings cited above assume that the active-duty personnel replaced by sponsored reservists would be removed from the military's end strength. If that was not the case, the replaced military personnel would be freed up to perform other functions, but the savings would be considerably smaller. The amount of savings realized would depend on a more detailed specification of the disposition of the replaced military personnel.

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7. This approach was outlined in Congressional Budget Office, *Budget Options* (February 2005), Option 050-33, pp. 60-61. It is similar to a program of the British Ministry of Defense.

8. End strength is the number of personnel on active duty at the end of the fiscal year.

This option, which would probably require legislation to implement, would place deployed contractors within the military chain of command, affording them the protections of military status and better ensuring military command and control. In particular, the conduct of sponsored reservists would be addressed by the Geneva Conventions and the UCMJ.

CHAPTER

1

Background Information on Civilian and Contractor Support of the Military

The U.S. military has always relied on civilian support, in the form of both contractors and federal civilians. Field armies in the 1700s and 1800s relied on contracted wagons and drivers; contractors have built bases, depots, ports, and roads; and almost all medical care was once provided by civilians.[1] Today, the Department of Defense (DoD) employs government civilians to perform many functions: teaching school; managing installations; maintaining buildings; issuing paychecks; testing, designing, and repairing weapon systems; conducting basic research; and overseeing contracts.

Two special types of employees blend the distinction between military and federal civilian personnel. Dual-status civilians (also called "military technicians") are federal workers who serve with Reserve and National Guard units. They serve as civilians while their unit is at home; but when the unit deploys overseas, they become reservists serving on active duty. Civilian mariners are federal civilians who crew ships operated by the Military Sealift Command, including, for example, ships in the Naval Fleet Auxiliary Force, which provide fuel, food, ammunition, spare parts, and other supplies to U.S. Navy ships. In addition, civilian mariners operate the Navy's two hospital ships, which (when augmented by a uniformed Navy medical detachment) provide emergency medical care within a wartime theater for deployed U.S. combat forces.[2]

The functions performed by contractors expanded into new areas during World War II. The increasing complexity of military aircraft, signal equipment, and vehicles made manufacturers' technical representatives a common presence, even at the front lines of a battle.[3] The rapid introduction of new and improved models of equipment and frequent changes in operating and maintenance requirements also contributed to that trend. In addition, contractors built ordnance repair facilities to support Allied operations in North Africa and the Middle East.[4]

Both the Korean War and the Vietnam War saw even greater use of contractors in supporting weapon systems, establishing base camps and depots, and providing other logistical functions. For example, by one estimate, more than 50 percent of the direct-support helicopter maintenance needed during those two wars was provided by contractors.[5] According to another estimate, about 2,000 contractor personnel were stationed in Vietnam in 1969 to provide aviation maintenance (further supplemented by an unspecified number of Army civilians).[6] Some authors attribute the increase in weapon system support during those two wars to the introduction of technically advanced systems.

After the Vietnam War and with the implementation of the All-Volunteer Force in the 1970s, some observers were concerned about the military's reliance on contractor support. A Defense Science Board report in 1982 noted that although contractor employees generally per-

1. Maj. William W. Epley, "Civilian Support of Field Armies," *Army Logistician* (November/December 1990), pp. 30-35.
2. See the Web site of the Military Sealift Command's Naval Fleet Auxiliary Force (www.msc.navy.mil/pm1/).
3. Charles R. Shrader, *Contractors on the Battlefield*, Landpower Essay No. 99-6 (Arlington, Va.: Association of the United States Army, Institute of Land Warfare, May 1999).
4. Ibid., p. 7.
5. Epley, "Civilian Support of Field Armies," p. 33.
6. Shrader, *Contractors on the Battlefield*, p. 8.

formed well during crises and combat, there were no formal mechanisms to ensure their continued performance.[7] A Congressional committee that held hearings in 1984 on contractor support of forward-based weapon systems concluded that many contractor personnel intended to leave the theater of operations if hostilities arose.[8] However, the historical record provides no firm evidence that such departures took place.[9]

Although no extended combat operations occurred during the 1980s, DoD's policies appeared to steer maintenance support away from contractors and back toward "organic" sources (those within the military's unit structure). According to DoD Directive 1130.2, issued in January 1983, "Contractor field services (CFS) . . . shall be used when necessary to accomplish a military mission, when provision of services by DoD engineering and technical services specialists is impractical and when required skills are not available within the Military Departments . . . the use of CFS is limited to a period not to exceed 12 months after the DoD components achieve self-sufficiency in the use of the new equipment or system." In July 1990, however, DoD canceled that directive, and the pendulum swung back toward the use of contractors.

The Military's Recent Use of Contractor Support

The Army's largest single use of contractors for logistics support has been through its Logistics Civil Augmentation Program (LOGCAP), a contract that the Army uses to provide support to its deployed combat forces.[10] Although the Army began to formulate LOGCAP as early as 1985, the first contract was not signed until 1992. Three LOGCAP contracts have been awarded to date. The Army awarded the first one—retrospectively called LOGCAP I—to Brown and Root Services (now Kellogg, Brown & Root, or KBR, a subsidiary of Halliburton Corporation) in 1992. LOGCAP I was a five-year contract in effect through 1997. It covered several locations, including the Balkans (see Table 1-1).[11]

LOGCAP II, another five-year contract, was competitively awarded to DynCorp in 1997. However, the United States Army Europe (USAREUR) preferred to continue using Brown and Root as its logistics support contractor. To that end, USAREUR awarded Brown and Root a sole-source Balkans Support Contract (BSC) in 1997. USAREUR put the BSC renewal contract up for competition in 1999, and KBR won that competition and retained the contract for an additional five-year term. The BSC ran concurrently with DynCorp's LOGCAP II contract, although there was relatively little activity on the latter. The current LOGCAP III contract was competitively awarded to KBR in December 2001.

7. Defense Science Board, *Report of the Task Force on Contractor Field Support During Crises* (October 1982).

8. House Committee on Government Operations, *Essential Civilian Support of DoD Frontline Weapon Systems Is Not Assured* (August 2, 1984), p. 6.

9. There is only one known instance in the past 30 years in which U.S. contractor personnel may have attempted to abandon their posts, and that instance is subject to considerable dispute. In August 1976, a group of American soldiers attempted to cut down a tree in the demilitarized zone separating North Korea and South Korea. Soldiers from North Korea surrounded the Americans and killed them using the Americans' ax. That incident was unnerving to U.S. personnel stationed in South Korea, including a contingent of U.S. contractors. Some people have claimed that contractor personnel deserted their posts in anticipation of escalated hostilities. The Defense Science Board, upon reviewing U.S. Army records, determined that although some contractor personnel expressed a desire to leave the area, none actually did so. Still, those concerns continue to be raised—for example, in General Accounting Office (now the Government Accountability Office), *Military Operations: Contractors Provide Vital Services to Deployed Forces but Are Not Adequately Addressed in DoD Plans*, GAO-03-695 (June 2003).

10. The other military services have similar, but smaller, logistics support contracts. The Air Force Contract Augmentation Program was awarded in 2002 to Readiness Management Support L.C., a subsidiary of IAP Worldwide Services, Inc. It is an eight-year cost-plus-award-fee contract. The Navy uses the Construction Capabilities Contract, a five-year cost-plus-award-fee contract awarded to Kellogg, Brown & Root in 2000. Because of the much larger size and scope of the Army's contract, CBO focused on LOGCAP for this study.

11. Some of the dollar totals in Table 1-1 are rough-order-of-magnitude estimates. In the interest of expediency, the government may authorize a contractor to proceed with work on the basis of such estimates, which are prepared in good faith by the contractor. The government then begins reimbursing the contractor as costs are incurred. Within a notional 180 days or before 50 percent of the work is completed (whichever occurs first), the contract is "definitized"—the government and the contractor reach agreement on the terms, specifications, and price of the task orders that make up the contract.

Table 1-1.

Costs of and Locations Served by LOGCAP and Balkans Support Contracts

Contract	Years	Locations	Total Cost (Millions of dollars)
LOGCAP I	1992 to 1997	Balkans, Haiti, Italy, Rwanda, Saudi Arabia, Somalia	815
LOGCAP II	1997 to 2002	Bosnia	81
Balkans Support Contract	1997 to 2002	Balkans	2,500
LOGCAP III	2001 to 2004	Afghanistan, Iraq, Kuwait, Turkey, other	15,350

Source: Congressional Budget Office based on data from Halliburton Corporation (agreed, or definitized, costs for LOGCAP I and the Balkans Support Contract); Department of the Army, Communications and Electronics Command (obligated funding for LOGCAP II); and Kellogg, Brown & Root (rough-order-of-magnitude estimates for LOGCAP III).

Note: LOGCAP = Logistics Civil Augmentation Program.

LOGCAP III is a 10-year contract consisting of one base year plus nine option years.[12]

During Operations Desert Shield and Desert Storm (henceforth referred to as Gulf War I), the Army used both civilian contractors and federal civilians extensively. Logistics support for Gulf War I was not provided by LOGCAP, which was still in the formulation stage and had not yet been awarded. Instead, both the U.S. military and the Saudi government purchased goods and services from a variety of firms. For example, the U.S. military engaged 76 U.S. contractors, who deployed about 9,200 employees to Iraq in support of the war.[13] In addition, the Saudi government provided or paid for 1.5 million gallons per day of petroleum products, as well as 4,000 trucks and more than $2 billion worth of food over the duration of the conflict.[14]

According to some researchers, the support provided by contractors during Gulf War I was vital to the success of military operations.[15] The need to quickly counter Iraqi aggression led to combat units being rapidly deployed to the wartime theater without the organic support units required to sustain operations. Contracted support provided for the reception, staging, onward movement, and sustainment of the troops. Army logistics units were deployed to the theater, but at a later date and in fewer numbers than would otherwise have been necessary if contracted support had not been available. In addition, contractors supported such systems as the M1, M1A1 and M1A2 versions of Abrams tanks; Bradley fighting vehicles; Kiowa Warrior (OH-58D) helicopters; tube-launched, optically tracked, wire-guided (TOW) missiles and Patriot missiles.[16] The degree to which contractors

12. The sources for this history include two reports by Frank Camm and Victoria A. Greenfield: *Risk Management and Performance in the Balkans Support Contract,* MG-282 (Santa Monica, Calif.: RAND Corporation, 2005), pp. 3-4; and *How Should the Army Use Contractors on the Battlefield? Assessing Comparative Risk in Sourcing Decisions,* MG-296 (Santa Monica, Calif.: RAND Corporation, 2005), pp. 137-138. KBR also provided some of this information to the Congressional Budget Office in a briefing on November 30, 2004.

13. General Accounting Office, *DoD Force Mix Issues: Greater Reliance on Civilians in Support Roles Could Provide Significant Benefits*, GAO/NSIAD-95-5 (October 1994), p. 5; and Eric A. Orsini and Lt. Col. Gary Bublitz, "Contractors on the Battlefield: Risks on the Road Ahead?" *Army Logistician*, vol. 31, no. 1 (January/February 1999), pp. 130-132.

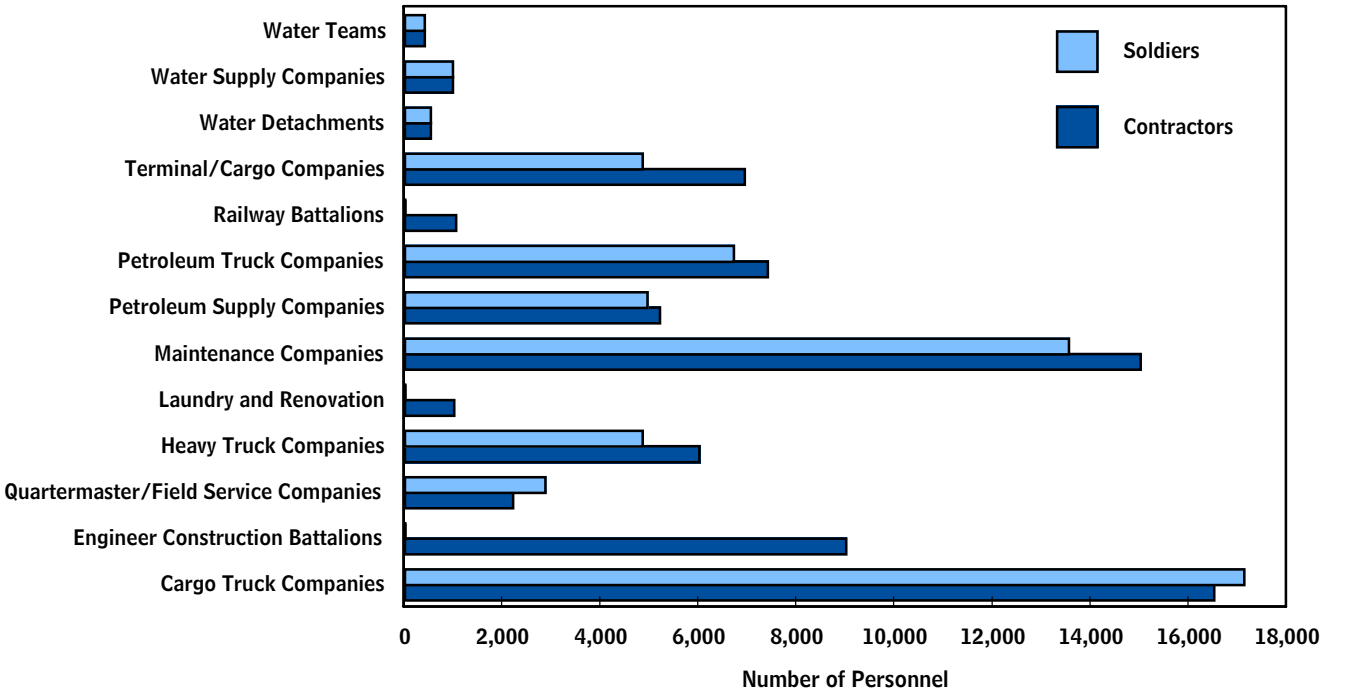
14. Congressional Budget Office, *Structuring the Active and Reserve Army for the 21st Century* (December 1997), p. 10.

15. John C. Tillson, *The Role of External Support in Total Force Planning* (Alexandria, Va.: Institute for Defense Analyses, 1997); and John Brinkerhoff, *External Support for the Army in the Persian Gulf War* (Alexandria, Va.: Institute for Defense Analyses, 2003).

16. George B. Dibble, Charles L. Horne III, and William F. Lindsay, *Army Contractors and Civilian Maintenance, Supply, and Transportation Support During Operations Desert Shield and Desert Storm*, vol. 1, Study Report AR113-01RD1 (Bethesda, Md.: Logistics Management Institute, June 1993); and James C. Hyde, "Defense Contractors Serve on the Front Lines of Operation Desert Storm," *Armed Forces Journal International* (March 1991), p. 32.

Figure 1-1.

Selected Logistics Functions Provided by Army Units and Contractors During Operations Desert Shield and Desert Storm



Source: Congressional Budget Office based on data reported in John C. Tillson, *The Role of External Support in Total Force Planning* (Alexandria, Va.: Institute for Defense Analyses, 1997).

augmented or offset organic Army capabilities varied for each of the logistics functions provided.

Other researchers have estimated that although fewer than 60,000 Army logistics troops were in-theater during Gulf War I, more than 70,000 additional soldiers would have been required to replicate all of the functions that contractors provided.[17] According to that research, contractors provided about half of the total transportation services (trucks of various sizes) used in the theater, as well as half of the water supply (see Figure 1-1). Contractors were the only providers of services such as engineering construction, laundry, and railway terminal operation.

As of December 2004, the current LOGCAP contractor had supplied about 44,000 employees to Southwest Asia, including nearly 15,000 U.S. expatriates (see Table 1-2). Of those 44,000 employees, some 38,000 (including nearly 12,000 U.S. expatriates) were either stationed in Iraq or were stationed elsewhere (Kuwait or Turkey, for example) but were likely to deploy to Iraq at some point as part of their duties. Most of the remaining 6,000 employees were based in Afghanistan and the nearby republic of Uzbekistan in support of Operation Enduring Freedom (OEF).

The Army's logistics capability resides in a section of its force structure known as combat service support, or CSS (see Box 1-1 for more information). As of May 2005, the Army had about 46,000 CSS personnel stationed in Iraq

17. Tillson, *The Role of External Support in Total Force Planning*.

Table 1-2.

LOGCAP and U.S. Army Logistics Personnel in Southwest Asia

	Iraq and Kuwait	Total, Operation Iraqi Freedom and Operation Enduring Freedom
LOGCAP Personnel		
U.S. expatriates	11,860	14,670
Third-country nationals	900	1,390
Host-country nationals	35	1,280
Subcontractors and labor brokers	25,510	26,890
Total	38,305	44,230
U.S. Army Combat-Service-Support Personnel	45,800	67,330

Source: Congressional Budget Office based on data from Kellogg, Brown & Root (LOGCAP data as of December 2004), the Defense Manpower Data Center (Army data based on counts of soldiers by occupation), and the Congressional Research Service (Army personnel deployed to Operation Iraqi Freedom).

Notes: LOGCAP = Logistics Civil Augmentation Program.

LOGCAP personnel in Southwest Asia are stationed in Iraq and Kuwait as well as in Afghanistan, Djibouti, Georgia, Turkey, the United Arab Emirates, and Uzbekistan.

LOGCAP counts exclude small numbers of U.S. Army and other Department of Defense military and civilian personnel who provide contract administration and oversight of LOGCAP.

Host-country nationals are citizens of the country in which the work is being performed. Third-country nationals are citizens of neither the United States nor the host country.

in support of Operation Iraqi Freedom (OIF) and a total of 67,000 CSS personnel in Southwest Asia as a whole (including OEF).[18]

Specifications Under the Army's Logistics Civil Augmentation Program

When it was initiated in 1992, LOGCAP was viewed by many observers as an innovative type of contract to support deployed Army forces. During peacetime, the LOGCAP contractor works with Army staff to plan logistics support of wartime or contingency operations. The contractor also participates in military exercises to ensure that its plans integrate well with the overall plans of the forces being supported. The contractor maintains a "worldwide management plan," which states how the contractor intends to mobilize its resources (personnel, subcontractors, materials, and so on) in response to a conflict. Part of that plan involves maintaining a database of current vendors.

The performance goals that the contractor must meet are usually stated in advance in concrete terms. For example, the contractor is required, at a minimum, to support a force of up to 25,000 troops (arriving in-theater by air and sea) for up to 180 days. The Army may also exercise an option that doubles the supported population to 50,000 troops and the duration to 360 days. As those

18. The Defense Manpower Data Center provided CBO with counts of all Army personnel deployed to either Operation Iraqi Freedom or Operation Enduring Freedom, as determined by their eligibility for a combat-zone tax exemption (the tax exemption is described at www.defenselink.mil/militarypay/pay/tax/10_combatzone_05.html). CBO then sorted those personnel by Army occupational code and categorized each soldier as either combat arms, combat support, or combat service support using an occupational directory found in Claire M. Levy and others, *Army PERSTEMPO [Personnel Tempo] in the Post Cold War Era*, MR-1032 (Santa Monica, Calif.: RAND Corporation, 2000), Appendix C. Finally, CBO scaled the three subtotals down to conform to an independent estimate of the total number of Army soldiers deployed to Operation Iraqi Freedom alone; that independent estimate of 104,000 soldiers as of May 5, 2005, is contained in Linwood B. Carter, *Iraq: Summary of U.S. Forces*, CRS Report for Congress RL31763 (Congressional Research Service, updated May 23, 2005), available at www.fas.org/sgp/crs/mideast/RL31763.pdf.

Box 1-1.

Combat Service Support in the U.S. Army's Force Structure

The Army's deployable forces are also known as Table of Organization and Equipment units. The Army divides such units into three large categories: combat, combat support, and combat service support (CSS). For the purposes of this study, the Congressional Budget Office's (CBO's) definition of "logistics" is identical to the Army's definition of CSS. Conceptually, the Army defines CSS as "The essential capabilities, functions, activities, and tasks necessary to sustain all elements of operating forces in theater at all levels of war. . . . [I]t includes but is not limited to that support rendered by service forces in ensuring the aspects of supply, maintenance, transportation, health services, and other services required by aviation and ground combat troops to permit units to accomplish their missions in combat."[1] Thus, CSS consists of support functions that do not directly involve combat but whose purpose is to help sustain combat troops on the battlefield.

The term "logistics" has various definitions within the Department of Defense. For example, the Joint Staff defines the term rather broadly to include combat engineering in addition to other support functions. The Army's definition of CSS is narrower, excluding combat engineering, which it classifies instead as combat support. Again, CBO uses the Army's concept rather than the Joint Staff's concept throughout this study.

CSS units are drawn from all three components of the total Army: the active Army, the Army National Guard, and the Army Reserve. All of the specific categories and functions within CSS are described in the following list:[2]

Band support: Provide music to enhance unit cohesion and morale.

Explosive ordnance disposal: Neutralize conventional, nuclear, chemical, and biological munitions and devices that present a threat to military operations and civilian facilities, materiel, and personnel.

1. Army Field Manual 4-0, *Combat Service Support* (August 2003).

2. Ibid.; and Army Field Manual 3-0, *Operations* (June 2001).

examples illustrate, performance goals for the LOGCAP contract are stated in terms of outcomes, not inputs. The contractor has broad latitude on the mix of labor, choice of subcontractors, transportation arrangements, and other aspects of organizing the production process to meet the specified goals.

LOGCAP is an indefinite delivery/indefinite quantity contract. Under such a contract, the Army awards the contractor the right to sell goods and services during a fixed period of time at prices within a negotiated range. However, the contract does not specify a firm quantity of goods and services, instead providing for the issuance of orders for the performance of tasks during the period of the contract. The task orders specify a schedule for the number of troops to be supported at various future dates, their geographic location and dispersion within a theater, the mix of services provided (within the overall menu delineated in the contract), and the duration of the effort. The contractor must begin providing the requested support as early as 15 days after a task order is issued.

As of March 10, 2004 (the date that the Congressional Budget Office collected data from KBR), the Army had issued roughly 90 task orders under LOGCAP III. Including the staging sites, LOGCAP III was operating out of 65 areas in eight countries and providing a broad range of services (see Box 1-2). Combined Joint Task Force 7 was the most senior U.S. military command directly supported by the contractor in the Iraqi theater. The contractor had also supported several additional organizations in Iraq, including the Coalition Provisional Authority, the New Iraqi Army, the Iraq Survey Group, the Defense

Box 1-1.

Continued

Field services: Feed, clothe, and provide personal services for troops, including clothing exchange, laundry, showers, textile repair, food services, sanitation, mortuary affairs, and mail services.

Financial management: Provide services to commanders in the areas of finance (pay for vendors, accounting, central funding, technical advice, and policy guidance) and resource management (technical advice on resource management implications and the cost of operations).

Health support: Maintain the force by preventing disease-related and non-battle-injury casualties; remove casualties from the battlefield; provide forward-based medical treatment, including en route care during medical evacuation; ensure adequate medical supplies and equipment; and provide veterinary, dental, and laboratory services.

Human resource support: Provide all of the activities and systems needed for manning the force, personnel support, and personnel services (including personnel accounting; casualty management; postal operations; and morale, welfare, and recreation) to service members, their families, Army civilians, and contractors.

Legal support: Perform operational law duties and provide advice and services in military justice, international law, administrative law, civil law, claims, and legal assistance in support of the command, control, and sustainment of operations.

Maintenance: Keep materiel and equipment in operational condition, or update and upgrade its capability.

Religious support: Provide and perform religious support services to protect the free exercise of religion. Those include personal delivery of rites, sacraments, ordinances, spiritual care, religious counseling, spiritual fitness training and assessment, and worship services. Also included are advice to commanders on matters of religion, morals, morale, and coordination with nongovernmental organizations and private voluntary organizations.

Supply: Acquire, manage, receive, store, and issue all classes of materiel. Includes the turn-in, exchange, or disposition of items.

Transportation: Move and transfer units, personnel, equipment, and supplies to support operations.

Intelligence Agency, and the Multinational Division of coalition troops.[19] In the Afghan theater, the contractor was supporting Combined Joint Task Force 180 as well as the new Afghan National Army.[20] LOGCAP III was also supporting Army and Marine Corps forces, albeit to a much more limited extent, in Djibouti, Georgia, Kuwait, Turkey, the United Arab Emirates, and Uzbekistan.

KBR estimated contract costs in advance of beginning work on each respective task order under LOGCAP III. The total estimated cost of the various task orders executed between December 2001 and December 2004 was $15.4 billion. However, actual costs could be lower or higher as the work is done and the Army issues change orders or other contract modifications. Through June 2005, the Army had obligated about $12 billion to LOGCAP III.[21] The final "definitized" costs may differ.[22]

19. Coalition countries whose troops were supported include Bulgaria, Hungary, Latvia, Poland, and Ukraine.

20. Combined Joint Task Force 180 was redesignated as Combined Joint Task Force 76 in April 2004, when the Army's 25th Infantry Division (Light) replaced the Army's 10th Mountain Division as the primary U.S. combat unit in Afghanistan.

21. Griff Witte, "Halliburton's Higher Bill," *Washington Post*, July 6, 2005, p. D-1.

22. For an explanation of definitized costs, see footnote 11 on page 2.

Box 1-2.

Summary of Services Provided by the LOGCAP III Contractor

Under the current Logistics Civil Augmentation Program (LOGCAP), contractors provide the following services to the U.S. Army in Southwest Asia:[1]

- Air-terminal and airfield operations;
- Ammunition storage and supply;
- Camp operations:
  - construction and maintenance,
  - electric power generation,
  - food service and dining facilities,
  - hazardous-materials management,
  - laundry services,
  - operations and maintenance, and
  - water and ice distribution;
- Communications and information technology;
- Equipment maintenance;
- Firefighting services;
- Fuel distribution;
- Morale, welfare, and recreation;
- Procurement and property management; and
- Transportation.

1. Kellogg, Brown & Root, "LOGCAP Current Operations Update Brief" (February 2004).

LOGCAP III is a cost-plus-award-fee contract. As such, the contractor is reimbursed for all reasonable, allowable, and allocable costs to perform the work, plus a base fee and an award fee. The base fee is 1 percent of the estimated contract cost that is negotiated in advance (not the actual costs incurred). The award fee is capped at 2 percent of the estimated contract cost. The precise amount of the award fee depends on the federal government's evaluation of the contractor's performance, which is continually monitored by an appointed LOGCAP Award Fee Evaluation Board. The board recommends an award fee, although that recommendation may be overruled by the Award Fee Determining Officer, who makes the final decision. The board computes a numerical rating based on a composite of scores for technical performance, cost performance, and management. The award fee increases with the contractor's numerical rating (up to the 2 percent cap), moving through successive award bands labeled "average," "good," "very good," and "excellent."

In May 2005, the Army announced award fees for six of the task orders that KBR had performed under LOGCAP III, covering the period from June 13, 2003, through December 31, 2004. Included was Task Order 59, the largest single task order within LOGCAP III, the costs of which CBO analyzes in detail below. The Army rated KBR's performance "very good" or "excellent" on all six task orders evaluated, and it awarded 88 percent of the available award fee pool. Specifically, the Army awarded $72 million from a pool of $82 million for all six task orders combined, including $55 million from a pool of $63 million for Task Order 59.[23]

LOGCAP is managed by a program manager within the Army Materiel Command (AMC). The program management office works with the contractor to develop the contingency plans (the contractor's first deliverable item). During the actual execution of the task order, the contractor is supervised on-site by the local commander's contracting officer representative and by AMC's Army Field Support Command. In addition, the Defense Con-

23. Charles R. Babcock, "KBR Gets $72 Million in Bonuses for Iraq Work," *Washington Post*, May 11, 2005, p. E-4.

tract Management Agency verifies that the contractor's cost, performance, and delivery schedule comply with the contract language. That agency also manages and tracks all government-furnished equipment that the contractor uses in performing its tasks. Finally, the Defense Contract Audit Agency audits the contractor's costs and determines which elements are allowable under the contract and the Federal Acquisition Regulations.

The Legal Status of Military Personnel, Government Civilians, and Contractors

As discussed above, civilians and contractors have a long history of working alongside the military in times of conflict. Necessity, quality, and cost have always been reasons to use civilians and contractors, but concerns from the Congress about the practice date back just as far.[24] One reason for the concern is the uncertain legal status of civilians and contractors performing functions closely linked with military operations. Military personnel, government civilians, and contractor employees all have different legal statuses and different command-and-control mechanisms. The legal issues regarding the various classes of personnel may be summarized by the following set of questions:

- How are the actions of the personnel controlled?
- Are the personnel subject to criminal prosecution by U.S. authorities?
- Are the personnel legitimate military targets of enemy forces?
- Will the personnel receive prisoner-of-war status if captured?
- Are the personnel subject to criminal prosecution by non-U.S. authorities for acts committed in support of U.S. military actions (such as war crimes)?

24. Shrader, *Contractors on the Battlefield*; George Cahlink, "Army of Contractors," *Government Executive Magazine* (February 2002), available at www.govexec.com/features/0202/0202s5.htm; and Steven J. Zamparelli, "Contractors on the Battlefield: What Have We Signed Up For?" *Air Force Journal of Logistics*, vol. 23, no. 3 (Fall 1999), pp. 10-19.

Command and Control and Punishment

Military personnel are under the direct command and control of military commanders and are subject to criminal punishment for failing to obey a lawful order.[25] Government civilians may be under the control of military commanders permanently or temporarily during a conflict, but they would probably be subject to only administrative actions, such as suspension or termination, if they failed to obey an order.[26] The rights and duties of contract employees are set forth in the contract, the Federal Acquisition Regulations, and the Defense Federal Acquisition Regulation Supplement.[27] A military commander can influence contractor employees' behavior through the contracting officer and the contractor's desire to have a satisfied customer, but the commander has limited direct control over any one employee. Although the commander can exclude a particular contractor employee from an area or evacuate the employee out of the theater, further administrative action is at the discretion of the contractor.[28]

Military commanders have less control over civilians and contractors than over military personnel who commit crimes during a conflict. The Uniform Code of Military Justice (UCMJ) outlines procedures for prosecuting members of the military should they commit a crime abroad.[29] Article 2 of the code provides jurisdiction over "persons serving with or accompanying an armed force in the field," but only "in time of war," which the courts have held to mean a war formally declared by the Congress. (There is some question as to whether the grant of courts-martial jurisdiction over civilians is constitutional

25. Lisa Turner and Lynn Norton, "Civilians at the Tip of the Spear," *Air Force Law Review*, vol. 51 (2001), p. 35.

26. Ibid.

27. Rebecca Vernon, "Battlefield Contractors: Facing the Tough Issues," *Public Contract Law Journal*, vol. 33, no. 2 (2004), p. 369 The Defense Federal Acquisition Regulation Supplement is codified under chapter 2 in title 48 of the Code of Federal Regulations. It states the DoD policies that implement the Federal Acquisition Regulations.

28. Karen Douglas, "Contractors Accompanying the Force," *Air Force Law Review*, vol. 55 (2004), p. 127; and Capt. Isolde K. Garcia-Perez, "Contractors on the Battlefield in the 21st Century," *Army Logistician*, vol. 31, no. 6 (November-December 1999), available at www.almc.army.mil/alog/issues/novDec99/ms454.htm.

29. 10 U.S.C. Ch. 47.

even during a declared war.)[30] Article 2 also provides jurisdiction over "retired members of a regular component of the armed forces who are entitled to pay" at any time. Thus, retired service members serving as contractors or civilian employees may remain under the UCMJ, in which case they would be subject to court-martial for offenses committed.[31] However, there is no general mechanism for the military to try DoD civilians or contractors who are not retired service members for crimes committed during undeclared wars.

To clarify the law as it applies to civilian employees of DoD and personnel working under contract to DoD, the Congress passed the Military Extraterritorial Jurisdiction Act in 2000.[32] Under that law, a DoD civilian or contractor may be tried in federal court (after being brought back to the United States to be prosecuted) for felonies perpetrated outside sovereign U.S. territory while accompanying U.S. forces.[33] The law applies only if the civilian or contractor has not been prosecuted either by the host nation's legal system or under the UCMJ. The law has been applied in very few cases.[34] One reason may be that it does not apply to civilians or contractors working for federal departments or agencies other than DoD or to those working for foreign governments.

Two additional statutes may apply to civilians accompanying U.S. forces. The War Crimes Act of 1996 provides that "whoever, whether inside or outside the United States, commits a [war crime] . . . shall be fined under this title or imprisoned for life or any term of years, or both, and if death results to the victim, shall also be subject to the penalty of death."[35] The law applies to members of the U.S. armed forces as well as any individual national of the United States, regardless of his or her employment. The second statute is the USA Patriot Act, which extended the territorial jurisdiction of the United States to include the "premises of the United States diplomatic, consular, military, or other United States government missions or entities in foreign States" with respect to offences committed by or against a national of the United States.[36] That provision was cited in the indictment of a Central Intelligence Agency contractor who allegedly caused the death of a prisoner in Afghanistan.[37] The United States has also asserted jurisdiction over crimes committed against U.S. government property or personnel regardless of where they occur throughout the globe.[38]

Lastly, DoD civilians and contractors may be subject to Status of Forces Agreements (SOFAs), which are agreements between the United States and host nations delineating the laws applicable to U.S. forces deployed within the host nation. SOFAs may include provisions that apply to contractor or civilian personnel accompanying the forces. Contractors are referenced in SOFAs as either having or not having "invited contractor status," with individual SOFAs detailing the specific requirements for a contractor to be included in the agreement.[39]

Status and Liability of Military, Civilian, and Contractor Personnel

Several international standards, including the Geneva Conventions and the Laws of the Hague, apply to actions taken during wars and conflicts. Collectively, those stan-

30. *United States v. Averette*, 19 U.S.C.M.A. 363 (1970).

31. 10 U.S.C. 802(a). J. Mackey Ives and Michael Davidson, "Court-Martial Jurisdiction Over Retirees Under Articles 2(4) and 2(6): Time to Lighten Up and Tighten Up?" *Military Law Review*, vol. 175 (March 2003), pp. 1-85.

32. 18 U.S.C. 3261-3267.

33. Jennifer Elsea, *Private Security Contractors in Iraq: Background, Legal Status, and Other Issues*, CRS Report for Congress RL32419 (Congressional Research Service, May 28, 2004).

34. Peter W. Singer, "War, Profits, and the Vacuum of Law: Privatized Military Firms and International Law," *Columbia Journal of Transnational Law*, vol. 24, no. 2 (2004), p. 537.

35. 18 U.S.C. 2441.

36. Charles Doyle, *Terrorism and Extraterritorial Jurisdiction in Criminal Cases: Recent Developments*, CRS Report for Congress RL31557 (Congressional Research Service, September 2, 2002), available for purchase at www.pennyhill.com/index.php?lastcat=&viewcat=14.

37. James J. McCullough and Courtney Edmonds, *Contractors on the Battlefield Revisited: The War in Iraq and Its Aftermath*, Briefing Paper No. 04-06 (Washington, D.C.: West Group, 2004).

38. Charles Doyle, *Extraterritorial Application of American Criminal Law*, CRS Report for Congress 94-166 (Congressional Research Service, September 2, 2002), available for purchase at www.pennyhill.com/index.php?lastcat= &viewcat=14.

39. James J. McCullough and Abram J. Pafford, *Contractors on the Battlefield: Emerging Issues for Contractor Support in Combat and Contingency Operations*, Briefing Paper No. 02-7 (Washington, D.C.: West Group, June 2002), p. 5.

dards are sometimes referred to as the laws of armed conflict (LOAC).[40] The details of those provisions are complex and often in dispute, and they do not have equal authority and effect. This discussion does not attempt to comprehensively address the subject, but it does point out some distinctions in the treatment of military personnel, civilians, and contractors.[41] Under the LOAC, prisoners of war, lawful combatants, noncombatants, and illegal combatants all have different statuses.[42]

Prisoners of War. Prisoner-of-war status applies to military personnel who fall under the control of enemy forces.[43] Government civilians and contractors who accompany the military and have identification cards, which would include most or all of the civilians and many of the contractors currently in Iraq, also can qualify as prisoners of war.[44] Prisoner-of-war status affords protections such as humane treatment, the right to communications, and return at the end of hostilities.[45] Some detainee protections apply even to illegal combatants, as discussed below.

Lawful Combatants. Military personnel, except for medical personnel and chaplains, usually qualify as lawful combatants under the Geneva Conventions, meaning that they are legitimate military targets of enemy forces.[46] They also obtain some immunity from prosecution for hostile actions taken during combat.[47] Lawful combatants are identified primarily by four criteria: clearly wearing particular types of uniforms or other distinguishing markings, carrying a weapon openly, operating under a clear command structure, and obeying the LOAC.

Noncombatants. The primary protections for civilians and contractors under international law come from the LOAC. Government civilians and contractors deployed with a force would generally qualify as noncombatants if they took no active part in hostilities.[48] As such, they would not be legitimate military targets of enemy forces, although they might be injured or killed during a military action against a legitimate target.

The legal status of government civilians and contractors performing functions closely linked to military operations—such as intelligence, weapon system maintenance, and resupply of forward-based forces—is less certain and is discussed next.[49] Those government civilians and contractors could be deemed to have taken an active part in hostilities. But because they do not meet the definition of combatants, they could be classified as illegal combatants and could be criminally prosecuted for actions taken during a conflict.[50]

Illegal Combatants and Uncertain Status. Some people do not meet the criteria for either combatant or noncombatant status. Individuals who take an active part in hostilities but do not meet the criteria for lawful combatants—as evidenced by failure to wear appropriate uniforms or by concealing their weapons—may be treated as illegal combatants and lose their immunity from prosecution for

40. Jennifer Elsea, *Treatment of "Battlefield Detainees" in the War on Terrorism*, CRS Report for Congress RL31367 (Congressional Research Service, January 13, 2005), p. 10; Vernon, "Battlefield Contractors: Facing the Tough Issues"; and Turner and Norton, "Civilians at the Tip of the Spear," p. 23.

41. For more information, see Turner and Norton, "Civilians at the Tip of the Spear," pp. 1-110; Michael Davidson, "An Introduction to the Legal Issues Associated with Civilian Contractors on the Battlefield," *Public Contract Law Journal*, vol. 29, no. 2 (2000), pp. 233-263; Clifford Rosky, "The Privatization of Punishment, Policing, and Military Force in Liberal States," *Connecticut Law Review*, vol. 36, no. 3 (2004), pp. 879-1032; American Bar Association, *Contractors on the Battlefield: Exploration of Unique Liability and Human Relations Issues* (2004); Army Field Support Command, "Contractor on the Battlefield Resource Library," available at www.afsc.army.mil/gc/newcob.htm; Elsea, *Treatment of "Battlefield Detainees" in the War on Terrorism*; and Adebayo Adedeji and Mark Rosen, *The Feasibility of Outsourcing on Aircraft Carriers* (Alexandria, Va.: CNA Corporation, March 2000).

42. Elsea, *Treatment of "Battlefield Detainees" in the War on Terrorism*, p. 7; Davidson, "An Introduction to the Legal Issues Associated with Civilian Contractors on the Battlefield"; Vernon, "Battlefield Contractors: Facing the Tough Issues"; and Turner and Norton, "Civilians at the Tip of the Spear," p. 24.

43. Elsea, *Treatment of "Battlefield Detainees" in the War on Terrorism*, p. 5; Turner and Norton, "Civilians at the Tip of the Spear," p. 25.

44. Turner and Norton, "Civilians at the Tip of the Spear," p. 35.

45. Ibid., p. 66; Vernon, "Battlefield Contractors: Facing the Tough Issues."

46. Medical personnel and chaplains have separate protections. See the Geneva Convention Relative to the Treatment of Prisoners of War, August 12, 1949, 6 U.S.T. 3317, Article 33.

47. Elsea, *Treatment of "Battlefield Detainees" in the War on Terrorism*, p. 6.

48. Michael Guillory, "Civilianizing the Force," *Air Force Law Review*, vol. 51 (2001), p. 115.

49. Ibid., pp. 134-136.

50. Ibid., p. 134.

hostile acts performed during a conflict.[51] Many contractors deploy as systems technicians, helping to maintain, repair, and operate weapon systems. Others operate unmanned aerial vehicles that can provide reconnaissance or even fire weapons. Still others analyze intelligence data, which they may transmit in the form of target coordinates to unmanned aerial vehicles or other (manned or unmanned) platforms that fire weapons. All of those functions may be interpreted as "taking active part in the hostilities" and, therefore, may cause contractors to forfeit their noncombatant status and move into the illegal-combatant category.[52] Illegal combatants are still entitled to humane treatment, but they may be subject to more-intensive interrogation and may not be entitled to release after hostilities have ceased.[53]

The legal status of civilians and contractors becomes even less certain when they are armed. The in-theater military commander may issue government firearms to deployed civilians and authorize them to use the firearms for their own protection. However, the armed civilians are authorized to use their weapons only within the geographic area specified by the military commander granting that authority.[54] DoD contractor employees may carry government-issued firearms and ammunition with the consent of their employer and if they are eligible to carry a firearm under U.S. law (meaning that they have not been convicted of a felony).[55] The armed employees must adhere to all military guidance regarding possession, use, safety, and accountability of weapons and ammunition. A DoD civilian or contractor who used weapons in any manner other than self-defense while participating in hostilities would lose his or her noncombatant status; even in a case of self-defense, that status would become questionable.

International law has begun to recognize that contractors serve neither as combatants nor as noncombatants but rather as part of a special niche deemed "civilians authorized to accompany the force." That means that they are entitled to some, but not all, protections afforded to noncombatants in addition to some protections afforded to combatants.[56] For example, they still qualify for humane treatment yet may be subject to criminal prosecution under local laws for actions taken during the conflict.[57] However, those issues are not yet fully settled.[58] Most of the legal debate about civilians and contractors accompanying the force depends on how the United States, the international community, and the enemy choose to interpret the laws of armed conflict.

Summary of Status. Military personnel qualify for full prisoner-of-war protections and have immunity from prosecution for hostile acts performed in support of U.S. military operations during a conflict. However, they are legitimate targets of enemy forces. Government civilians and contractors will usually qualify as prisoners of war and will not be legitimate military targets of enemy forces unless they take a direct and active part in the hostilities. The exact determination of what constitutes a direct and active part in hostilities has not yet been fully resolved, however.

Those legal distinctions for status as a noncombatant or a prisoner of war are important for personnel working for the U.S. military only if the enemy follows the LOAC. The distinctions are not relevant for a conflict like the current operation in Iraq because the insurgency forces do not follow those laws. Insurgency forces have detonated explosives in public areas that are as likely to kill noncombatants (including Iraqi civilians) as combatants; they have used prisoners as hostages and tortured and

51. Ibid., p. 111; *Ex parte Quirin*, 317 U.S. 1, 31 (1942); and Adedeji and Rosen, *The Feasibility of Outsourcing on Aircraft Carriers*.

52. Guillory, "Civilianizing the Force," pp. 134-136; and Zamparelli, "Contractors on the Battlefield: What Have We Signed Up For?"

53. Elsea, *Treatment of "Battlefield Detainees" in the War on Terrorism*, pp. 6-7.

54. See the Web site on civilian employee guidance issued by the U.S. Army Forces Central Command, available at www.arcent.army.mil/CivEmpGuide/index.asp.

55. Department of Defense, Defense Federal Acquisition Regulation, 48 C.F.R. 252 (2005); and Joe A. Fortner, "Managing, Deploying, Sustaining, and Protecting Contractors on the Battlefield," *Army Logistician*, vol. 32, no. 5 (September/October 2000), pp. 3-7, available at www.almc.army.mil/alog/issues/SepOct00/ms571.htm.

56. McCullough and Edmonds, *Contractors on the Battlefield Revisited: The War in Iraq and Its Aftermath*; and Fortner, "Managing, Deploying, Sustaining, and Protecting Contractors on the Battlefield."

57. Davidson, "An Introduction to the Legal Issues Associated with Civilian Contractors on the Battlefield," p. 245.

58. *Hamdi v. Rumsfeld*, 124 S. Ct. 2633 (U.S. 2004); Guillory, "Civilianizing the Force," p. 111; Vernon, "Battlefield Contractors: Facing the Tough Issues," p. 401; and Zamparelli, "Contractors on the Battlefield: What Have We Signed Up For?"

Table 1-3.

Comparison of Fatality Rates Among Selected Workers in Iraq

	Data Availability					
	Starting Month	Ending Month	Duration (Months)	Average Population	Number of Fatalities	Annual Fatality Rate per 100,000 Employees
Kellogg, Brown & Root Employees	March 2003	November 2004	21	38,305	27	40.3
U.S. Army Personnel						
Combat arms	March 2003	May 2005	27	34,710	693	887.3
Combat support	March 2003	May 2005	27	23,450	124	235.1
Combat service support	March 2003	May 2005	27	45,800	292	283.4
Department of Defense Civilians	March 2003	December 2004	22	2,930	3	55.0
Memorandum:						
Fatality Rates for Employment in the United States						
Transportation sector	January 2003	December 2003	12	4.6 million	805	17.5
Agricultural sector	January 2003	December 2003	12	2.3 million	707	31.2

Source: Congressional Budget Office based on data from Kellogg, Brown & Root, the Bureau of Labor Statistics, the Congressional Research Service, and the Department of Defense.

Note: The information in this table reflects all fatalities—namely, individuals killed in action as well as those who died from accidents, disease, and other causes.

even killed them.[59] Noncombatants may even be at greater risk because they are more vulnerable. Military personnel, contractors, and civilians all require protection in hostile areas, but military personnel may require less outside security than the other groups. Arming civilians or contractors may lessen the need for security by other military units, but it may also increase the uncertainty over the legal status of the civilians or contractors.

Contractors' Fatality Rates

Although contractor personnel have traditionally worked in rear areas, away from the front line of battles, recent experience during Operation Iraqi Freedom demonstrates that the distinction between front lines and rear areas is often blurred, leaving contractor personnel vulnerable to considerable physical danger. For example, Kellogg, Brown & Root has operated as many as 80 truck convoys per day in Iraq, transporting supplies and equipment through hostile areas. In addition, KBR personnel other than truck drivers (construction crews, for instance) are at risk while being driven to and from their worksites.

This section compares KBR's fatality rates in Iraq with those of the U.S. Army and other benchmarks (see Table 1-3). The comparison includes all fatalities: individuals killed in action (whether they were primary or collateral targets), as well as those who died from accidents (mostly motor vehicle accidents), disease, and other causes.

KBR reported 27 fatalities and 179 nonfatal injuries among its employees (both U.S. and foreign nationals) and subcontractors working on LOGCAP in Iraq between March 2003 and November 2004.[60] A different source lists a total of 273 fatalities among all contractors

59. Major combat operations against the (former) regular Iraqi army took place during the period from March 19, 2003, through April 30, 2003. The continuing battle between the U.S. military and irregular insurgency forces in Iraq began on May 1, 2003. Some of the ensuing legal issues are discussed in Phillip Carter, "What the Law Says About the Recent Killings in Iraq," CNN.com, April 5, 2004, available at www.cnn.com/2004/LAW/04/05/carter.iraq/index.html.

60. Data provided to CBO by Kellogg, Brown & Root, November 30, 2004.

Box 1-3.

The Total Army Analysis Process

Total Army Analysis (TAA) is the process the Army uses to determine the numbers and types of units, and associated numbers of soldiers in the various occupational specialties, with which it will meet national objectives within personnel and budgetary constraints. The TAA process takes account of various guidance documents from the President, the Congress, the Secretary of Defense, the Joint Staff, and the Army Staff to develop a blueprint for Army forces that will be funded and made available for operations.[1]

The force structure derived from the TAA process consists of the Operating Force (Table of Organization and Equipment units that are available to deploy during contingencies) and what the Army calls the Generating Force (nondeployable units that acquire, train, maintain, and sustain the Operating Force).

The forces are also divided into nine components, beginning with the active Army (component 1), the Army National Guard (component 2), and the Army Reserve (component 3). The units in component 4 (sometimes abbreviated as "compo 4") exist only on paper, and they are deliberately left unfunded so that available resources can be applied instead to force-structure units having higher priority, or to other Army programs. Component 5 is merely a memo entry to identify the gap between new requirements and the currently programmed force; that gap is not additive to the requirements in the other components. Component 6 contains units that maintain the Army's prepositioned sets of equipment. Components 7 and 8 represent direct and indirect host-nation support, respectively. Component 9 represents the Logistics Civil Augmentation Program.

TAA is a biennial process that begins each even-numbered year and is completed the following year. TAA involves Army-wide participation and comprises two phases.

Phase I: Requirements Determination. In this phase, the Army determines the size and types of combat forces (for example, divisions and brigades), deployable support forces needed to accompany the combat forces, and the Generating Force it needs to adhere to guidance documents. Several high-level guidance documents (such as the National Security Strategy, the Joint Strategic Capabilities Plan, and the Contingency Planning Guidance) and

1. The TAA process is described in U.S. Army War College, *How the Army Runs: A Senior Leader Reference Handbook, 2003-2004* (Carlisle, Pa.: U.S. Army War College, 2003).

in Iraq between the start of hostilities in March 2003 and March 24, 2005.[61]

KBR's 27 fatalities were drawn from a workforce of about 38,000 employees (including foreign nationals and subcontractor personnel) working on LOGCAP in Iraq over a 21-month period.[62] The implied fatality rate is 40.3 per 100,000 people per year (see Table 1-3). As a point of comparison, CBO estimated the fatality rates for Army troops (combat arms, combat support, and combat service support) stationed in Iraq in support of Operation Iraqi Freedom.[63] The Army's rate of 283.4 for CSS

61. Tony Capaccio, "Titan Has Most Deaths Among Iraq Contractors," Bloomberg.com, March 24, 2005.

62. The 38,000 figure explicitly excludes about 6,000 KBR employees based elsewhere. (More than 4,000 of those employees are based in Afghanistan and Uzbekistan, where they support Operation Enduring Freedom.)

63. The estimation of Army troop levels in combat arms, combat support, and combat service support was described in footnote 18. CBO distributed all Army fatalities in Iraq into those three personnel categories using a detailed list of fatalities, including occupational code, available at a DoD Web site (http://web1.whs.osd.mil/mmid/casualty/castop.htm) and using an occupational directory found in Levy and others, *Army PERSTEMPO in the Post Cold War Era*, Appendix C.

Box 1-3.

Continued

Army inputs (The Army Plan) together address national objectives, threats, and resource assumptions and assign prioritized missions to the Army. The TAA process determines the size of the combat forces required to meet those threats and missions, then uses quantitative analysis and computer modeling to develop support forces appropriate to the combat forces and finally the Generating Force. The result is a complete list of the units the Army believes are required to fulfill its assigned missions.

Phase II: Resources Determination. In this phase, the Army reconciles the "requirements" generated in the previous phase with the reality of personnel and budgetary constraints to determine whether the proposed force can be manned, trained, equipped, and sustained. The requirements are also compared with the existing force structure to identify shortfalls, creating a plan to fulfill the unmet requirements while attempting to reduce risk. Decisions are made about the trade-off between personnel and budgetary constraints and risks stemming from the fact that not all of the requirements may be met. The final list of units is allocated between the funded components of the active Army, Army National Guard, Army Reserve, and the unfunded component 4.

The list of funded units is an input in developing the Army's Program Objective Memorandum (POM), which states the Army's proposed funding program extending out several years beyond the budget year. For example, during fiscal year 2002, the Army developed POM-04/09 (the POM that began with fiscal year 2004 and spanned subsequent future years through 2009). The force-structure goals stated in TAA-04/09—goals of 507,000 personnel in the active Army plus a total of 608,000 in the Army National Guard and Army Reserve—were intended to determine the funded troop levels in the 2009 column of POM-04/09. In practice, though, POM-04/09 reflected the Army's previously approved end-strength plan of 482,000 personnel in the active Army plus a total of 555,000 in the Guard and Reserve. (Those figures do not reflect temporary increases in Army end strength for the war on terrorism, which are excluded from the Army's POM but funded instead via supplemental appropriations.) The goals stated in TAA-04/09 were higher than the approved end-strength plan, revealing that the TAA process does not completely embody the personnel and budgetary realities that constrain the Army's POM.

personnel is seven times KBR's rate, implying that contractor personnel have not been exposed to nearly as much risk of death as the most similar Army soldiers. The CSS rate is higher than the rate for combat-support personnel, 235.1 fatalities per 100,000 people (that difference is marginally statistically significant), but both of those rates are significantly lower than the rate for soldiers in the combat arms, 887.3 fatalities per 100,000.

To obtain a different comparison, CBO examined KBR's fatality rate in Iraq relative to the fatality rates for employment in the United States. The overall rate of fatal occupational injuries in 2003 was 4.0 per 100,000 workers. But within certain sectors, the rate was much higher. Among the 15 major industrial sectors tracked by the Bureau of Labor Statistics, transportation and warehousing is probably the most comparable with LOGCAP in terms of job content. That sector had the third-highest fatality rate among the 15 sectors (the highest rate was found in agriculture, forestry, fishing, and hunting; the second highest in mining). The fatality rate in transportation and warehousing, at 17.5 per 100,000 workers per year, was less than half of KBR's rate of 40.3, and the difference between those two rates is statistically significant. The rate in agriculture (although not directly comparable in terms of job content to KBR's tasks) was lower at 31.2 per

100,000 workers per year, although the difference between that rate and KBR's rate is not statistically significant.[64]

Finally, CBO computed the fatality rate for DoD civilians in Operation Iraqi Freedom. A total of three DoD civilians were killed in that operation between March 2003 and December 2004, during which time the average number of civilians in-theater was 2,930. The implied fatality rate is 55.0 per 100,000 people per year. Although that rate exceeds KBR's rate, the civilian population at risk is small, so the difference between the two rates is not statistically significant.[65]

Contractors' Role in the Army's Force Structure

The question addressed in this section is whether contractor personnel (particularly those who support the LOGCAP contract and weapon systems) substitute for uniformed soldiers in the Army's overall force structure or whether they augment an organic capability that remains in the uniformed Army. The data that CBO analyzed show that contractors have augmented the Army's support capability rather than served as a substitute.

The Army uses a process called Total Army Analysis (TAA) to determine—on the basis of its roles, missions, and the threats it faces—the numbers and types of units it requires and the associated numbers and occupational specialties of soldiers (see Box 1-3 on pages 14 and 15). TAA operates within personnel and budgetary constraints, and some units—although "required"—must be left unfunded in order to fund higher-priority units within the force structure. The unfunded units, known as component 4 units, exist only on paper.

The force structure derived from the TAA process contains both deployable forces (that is, Table of Organization and Equipment, or TOE, units) and nondeployable forces. The Army divides its deployable forces into three large categories: combat, combat support (CS), and combat service support (see Box 1-1 on pages 6 and 7). The LOGCAP contractor can fill the gap if organic CSS units do not exist in sufficient numbers to support deployed combat units. Weapon-system support contractors—who perform maintenance on weapon systems and provide parts, training, and software support—can substitute for certain units classified as combat support and other units classified as combat service support.[66] Both the CS and CSS units are drawn from all three components of the total Army: the active Army, the Army National Guard, and the Army Reserve.

The Army's nondeployable forces are known as Table of Distribution and Allowances (TDA) units; collectively, they are known as the Generating Force. The objective of the Generating Force is to "create, provide, manage, and sustain the [Army]. . . . The Generating Force consists of the Army's institutional base, industrial base and infrastructure spread across HQDA [Headquarters, Department of the Army], the MACOMs [major commands], field operating agencies, and staff support agencies."[67] Contractors are used extensively to support the Generating Force, but those types of contractors operate in the United States rather than directly supporting overseas combat operations, and thus they are not the subject of this study.

Some individual soldiers are classified as transients, trainees, holdees, or students (TTHS). Although those soldiers count against the Army's total end strength, they are not assigned to either TOE or TDA units. The active Army has about 55,000 soldiers classified as TTHS, more than 80 percent of whom are either trainees or students.[68] Those soldiers may be in basic or advanced training, attending various schools, or in transit between assignments and would not be adequately trained or otherwise available to deploy to a wartime theater. Finally, even some fraction of the soldiers assigned to deployable

64. Fatality rates by industrial sector come from Department of Labor, Bureau of Labor Statistics, *National Census of Fatal Occupational Injuries in 2003* (September 22, 2004).

65. The number of civilians is from monthly data collected by the U.S. Central Command. The number of fatalities comes from a Web site that DoD updates weekly (www.defenselink.mil/news/casualty.pdf); the version of that site that CBO used was "Operation Iraqi Freedom: U.S. Casualty Status as of April 27, 2005."

66. For example, soldiers in career management field (CMF) 31, signal operations, operate and maintain communications equipment and are classified as combat support. Soldiers in CMF 35, electronic maintenance and calibration, are classified as combat service support. Both groups are candidates for substitution by civilian contractors.

67. Headquarters, Department of the Army, *2005 Army Modernization Plan*, Annex B, p. B-20.

68. Data provided by the Defense Manpower Data Center as of August 2004.

Table 1-4.

Distribution of the Army's Authorized End Strength, by Component and Function, Fiscal Year 2005

	Deployable Personnel				
	Combat	Combat Support	Combat Service Support	Nondeployable Personnel	Total
Active					
Thousands of soldiers	151	79	92	160	482
Percent	31	16	19	33	100
Guard					
Thousands of soldiers	169	67	89	24	350
Percent	48	19	26	7	100
Reserve					
Thousands of soldiers	14	40	84	67	205
Percent	7	20	41	32	100
Total					
Thousands of soldiers	**334**	**187**	**265**	**251**	**1,037**
Percent	**32**	**18**	**26**	**24**	**100**

Source: Congressional Budget Office based on data from the Department of Defense's Forces, Readiness, and Manpower Information System (FORMIS).

Notes: Authorized end strength is the number of soldiers the Congress has authorized and funded for the end of the fiscal year.

Numbers may not add up to totals because of rounding.

(TOE) units may be unavailable for any particular deployment because of illness, pregnancy, or other reasons.

Concentration and Deployment of the Army's Logistics Personnel

Overall, 24 percent of the Army's personnel are considered nondeployable (see Table 1-4). Among the three components of the Army, the percentages vary. For example, 33 percent of active Army personnel and 32 percent of Army Reserve personnel are considered nondeployable. The Army National Guard—although often associated with homeland security, local disaster relief, and other missions within the individual states—has only 7 percent of its personnel classified as nondeployable.

The standard for "deployable" is not as stringent in the National Guard as it is in the other Army components, however. Although many National Guard personnel have been deployed to Operations Enduring Freedom and Iraqi Freedom, a "deployment" for National Guard personnel involves assignment to any unit or detachment that operates in any location other than its home station. Participation in local disaster relief, therefore, would qualify as a National Guard deployment. Any Guard member who is qualified to participate in those activities would be classified as deployable.

The percentages shown in Table 1-4 are consistent with the composition of Army personnel who have actually deployed to the Afghan or Iraqi theaters between September 11, 2001, and February 28, 2005.[69] Some 181,000 soldiers from the Army National Guard and 101,000 from the Army Reserve have been mobilized during that period. Of those cumulative totals, 126,000 from the Guard and 76,000 from the Reserve have been deployed to OEF or OIF. (The remainder have been called up either to serve inside the United States or to deploy to other locations throughout the world). Considering that

69. Although planning began within days of the September 11 terrorist attacks, the first U.S. military action in Afghanistan after September 11 was a series of attacks on Al Qaeda training camps and Taliban military installations that began on October 7, 2001. See Jim Garamone, "America Launches Strikes Against Al Qaeda, Taliban," American Forces Press Service, October 7, 2001, available at www.defenselink.mil/news/Oct2001.

313,000 active Army soldiers have been deployed to those operations, the Guard and Reserve combined represent 39 percent of the total number of soldiers (515,000) deployed since September 11, 2001. Deployments toward the end of that period are even more heavily weighted toward Guard and Reserve soldiers. Taking a "snapshot" as of February 28, 2005, some 102,000 Army National Guard and Reserve soldiers were deployed to OEF or OIF, representing 46 percent of the Army total of 222,000.[70]

The distribution of mobilized reservists varies by military occupation as well as by component. Between September 11, 2001, and November 2004, call-up rates reached 45 percent in some officer career fields, including military police, intelligence, and fixed-wing aviation. Call-up rates exceeded 55 percent in some enlisted specialties, such as installations security, law enforcement, and motor vehicle operation. Yet reservists in other career fields (for example, medical and legal) experienced relatively low rates of mobilization.[71]

The Army's logistics (CSS) units reside disproportionately in the frequently deploying Guard and Reserve components (see Table 1-4). Among deployable Guard personnel, 27 percent [89,000 / (350,000 - 24,000)] are classified as combat service support. The corresponding figures are 60 percent of Reserve personnel but only 28 percent of active-duty Army soldiers. To put matters differently, the three components have roughly equal numbers of CSS personnel (ranging between 84,000 and 92,000 soldiers). The active Army accounts for 41 percent of the total number of deployable personnel but only 35 percent of the deployable personnel within CSS.

The Army's Policy on Organic and Contractor Logistics

Some observers contend that the Army has attempted to reduce its organic CSS footprint—using contractors to provide those services—and apply the freed-up military resources to other uses.[72] Army doctrine itself is ambiguous on whether contractor support should augment the Army's organic logistics capability or substitute for that capability and enable a reduction in the Army's CSS footprint. CBO analyzed Army data on the number of soldiers assigned to military occupations that correspond to CSS. Those data indicate that contractor support has augmented the Army's logistics capability rather than served as a substitute.

The Army's regulation on contractors accompanying deployed forces states that contracted support should augment, but not replace, military force structure. (That position is consistent with the nomenclature: The "A" in LOGCAP stands for "augmentation," suggesting that at least when the program was first formulated, LOGCAP was designed to augment, not replace, organic Army assets.) In particular, the regulation states that contractors will be used on an "as-needed" basis only when U.S. military, DoD civilian, host-nation, or multinational support is not readily available.[73]

Other Army policy documents, however, state that contracted support should substitute for Army units, and they specifically direct planners to incorporate such support when determining requirements for the Army's force structure. For example, the Army regulation on LOGCAP directs the component commanders and the Deputy Chief of Staff for Operations and Plans (DCSOPS, also known as the Army's code G-3) to determine adjustments to the Army's force structure on the basis of awarded contingency contracts and contingency clauses

70. Data provided by the Department of Defense, Office of the Assistant Secretary for Reserve Affairs, as of February 28, 2005.

71. Congressional Budget Office, *The Effects of Reserve Call-Ups on Civilian Employers* (May 2005), p. 9.

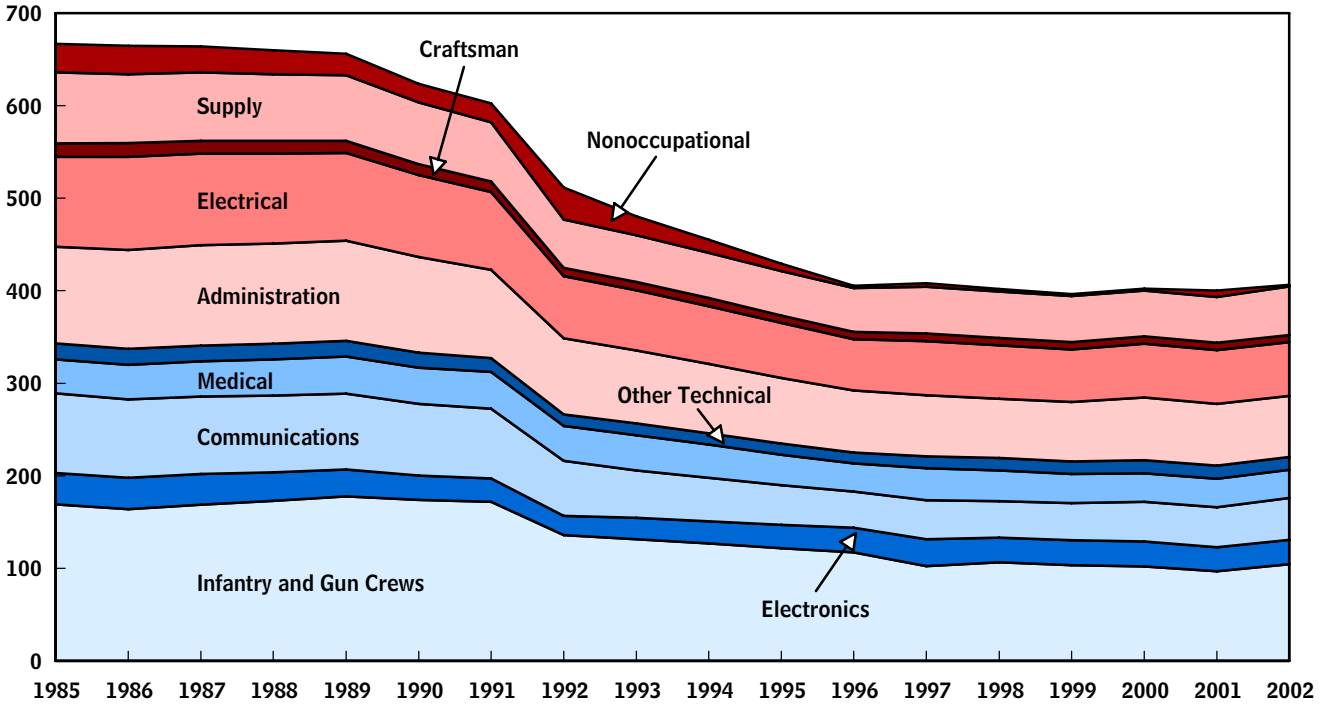
72. Greenfield and Camm, in *Risk Management and Performance in the Balkans Support Contract*, state "Although officially the BSC [Balkans Support Contract] augments Army military support capabilities in the Balkans and nearby countries—e.g., Bosnia, Hungary, Kosovo—it has helped the Army reduce its in-house role in CSS provision in the region by partially devolving responsibilities for service coordination and delivery and freeing up resources, especially Army manpower, for other core functions" (p. 1).

73. Army Regulation 715-9, *Contractors Accompanying the Force* (October 1999).

Figure 1-2.

Number of Enlisted Personnel in the Active Army, by Occupational Group, 1985 to 2002

(Thousands)



Source: Congressional Budget Office.

Note: The nonoccupational grouping includes patients, students, personnel with unassigned duties, and others not classified elsewhere.

included in peacetime contracts.[74] The regulation goes on to require that contracted support be expressed in terms of equivalent Army units that would be necessary if the contingency contracts were not executed and to include those offsets in the TAA process for determining Army force structure. The Army's regulation on host-nation support states that it, too, should be treated as a substitute for Army units—generating offsets in the TAA process—albeit only when that support is "reasonably assured."[75]

Empirical Evidence on the Share of Logistics Personnel

Between 1985 and 2002 (a period including the drawdown of the early 1990s), the number of enlisted personnel assigned to noncombat occupations in the active Army appears to have declined in roughly the same proportion as the number assigned to combat occupations (see Figure 1-2).

74. Army Regulation 700-137, *Logistics Civil Augmentation Program (LOGCAP)* (December 1985). The combatant commanders are the four-star military officers who command one of the unified combatant commands, such as the U.S. Central Command. The combatant commanders were known as commanders in chief (CINCs) of their respective commands until an October 2002 memorandum from Secretary of Defense Donald Rumsfeld explained that the term CINC was to be reserved exclusively for the President. The component commands, such as United States Army Europe, are the services' regional headquarters and are subordinate to the combatant commands. The combatant commanders relay their requests for forces and support through the component commanders to the services' U.S. headquarters.

75. Army Regulation 570-9, *Host Nation Support* (October 1990). The regulation goes on to state that "WHNS [wartime host-nation support] is considered to be reasonably assured upon the conclusion of a formal WHNS agreement between the governments of the United States and the host nation" (Section 5d).

Since 1996, the share of enlisted personnel assigned to support billets in the active Army has remained essentially constant (see the top panel of Figure 1-3). The four metrics in that figure differ on the basis of whether CS billets are added to CSS billets (as mentioned earlier, contractors can substitute for soldiers in some CS and CSS functions) and whether the denominator is restricted to billets in deployable (TOE) units or also includes TDA units. Figure 1-3 is less definitive than Figure 1-2 because the data begin in 1996, after the Army's 1990s drawdown was mostly complete. (CBO could not obtain consistent data to extend Figure 1-3 earlier.) Furthermore, the isolated plot points for TAA 2009 indicate that the Army intends to retain its own organic support capability in the immediate future.[76]

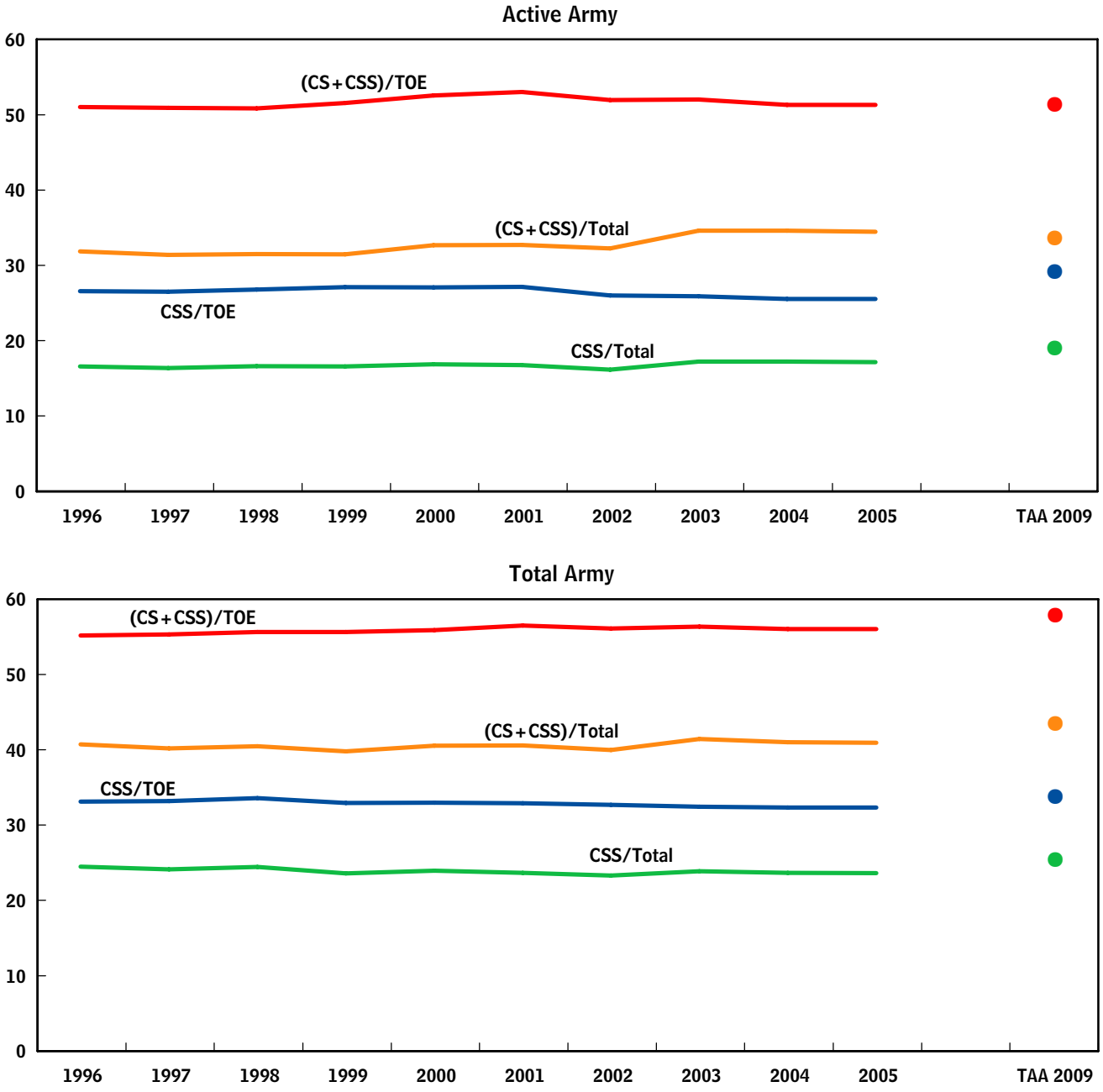
In relation to the total Army, the percentages of soldiers assigned to CS and CSS billets are higher than they were for the active Army alone, because of the concentration of CSS billets in the Guard and Reserve (see the bottom panel of Figure 1-3). However, the share of soldiers in CS and CSS billets has remained essentially unchanged since 1996, and it is projected to stay roughly constant through TAA 2009.

76. The TAA 2009 plot points are based on CBO's analysis of data extracted from the TAA-09 Army Structure Message, May 30, 2002.

Figure 1-3.

Percentage of Assigned Personnel in the Army

(Percent)



Source: Congressional Budget Office based on data from the Department of Defense's Forces, Readiness, and Manpower Information System.

Notes: CS = combat support; CSS = combat service support.

See Box 1-1 for an explanation of Table of Organization and Equipment (TOE) units, which are deployable, and Table of Distribution and Allowances units, which are nondeployable. See Box 1-3 for an explanation of the Total Army Analysis (TAA) process.

CHAPTER

2

Factors That Determine the Mix of Military Personnel, Federal Civilians, and Contractors

There is probably no single "best" mix of military personnel, federal civilians, and contractors to support deployed military forces. Current practice has evolved over many years, and it is rooted in federal statute, the Department of Defense's and the Army's regulations, and institutional culture. For example, both title 5 and title 10 of the U.S. Code (laws that regulate personnel policies for civilians and the military, respectively) influence who supports military operations overseas. DoD and the military services issue policies that implement title 5 and title 10 and help determine the force mix overseas.[1]

In addition, each crisis or conflict is likely to vary from previous ones, so a preferred distribution of personnel for one type of conflict may prove impossible to implement in another. During Operations Desert Shield and Desert Storm, for example, 63 percent of nonmilitary support was provided by foreign contractors, predominantly Saudi Arabian firms.[2] During Operation Iraqi Freedom, however, the U.S. military has been relying on a combination of organic support, deployed federal civilians, and U.S. support contractors.

Advantages of Contractors

Contractors offer several advantages over federal civilians and military personnel. To begin with, contractors often have an extensive capacity to provide deployed military forces with the same skills, capabilities, and expertise that they are already providing to the military in the United States or to state and local governments and commercial clients—skills that the military may lack in its own deployable forces. For example, DoD deployed Predator unmanned aerial vehicles to Albania and Hungary to support Operations Joint Promise (1995) and Joint Endeavor (1996) in the former Yugoslavia. Because the Predator system was still in development, only contractor personnel had the necessary skills to operate and maintain the system.[3]

Using contractors also provides DoD with flexibility. For example, the military's "up-or-out" promotion system causes many highly trained personnel to leave active duty every year.[4] When DoD is able to employ those personnel as contractors, it continues to recoup some of its training investment. Along similar lines, retaining an occupation in the military generally requires creating or maintaining an entire career track, including both student and instructor training positions as well as a chain of

1. Three examples are Army Regulation 700-137, *Logistics Civil Augmentation Program (LOGCAP)* (December 1985); Army Regulation 715-9, *Contractors Accompanying the Force* (October 1999); and Army Field Manual 3-100.21, *Contractors on the Battlefield* (January 2003).

2. George B. Dibble, Charles L. Horne III, and William F. Lindsay, *Army Contractors and Civilian Maintenance, Supply, and Transportation Support During Operations Desert Shield and Desert Storm,* vol. I, Study Report AR 113-01RD1 (Bethesda, Md.: Logistics Management Institute, June 1993), Chapter 2, p. 2-4.

3. The Predator (also known as RQ-1A) first flew in June 1994, only six months after the contract was awarded to General Atomics Aeronautical Systems.

4. Each military service publishes a matrix that gives the "high year of tenure" for each enlisted pay grade. Personnel who are not promoted to the next pay grade are separated from active duty upon completing the high year of tenure for their pay grade, in which case they may be eligible for severance pay (see http://usmilitary.about.com/od/navypromotions/a/hyt.htm).

command. Several studies have shown that outsourcing military positions offers significant savings (higher than those from outsourcing government civilian positions).[5]

Some DoD officials have stated that institutional obstacles to reassigning civilian workers hinder DoD's ability to use civilians in ongoing operations, again encouraging the use of contractors.[6] To address those and related concerns, the 2004 National Defense Authorization Act created the National Security Personnel System (NSPS). In February 2005, DoD and the Office of Personnel Management jointly released the proposed NSPS regulations for public comment.[7] Those regulations would introduce a more flexible compensation system and allow greater ease in hiring and firing employees. The unions representing federal workers have objected to certain components in the regulations, however, and it is unclear what the eventual system will look like or whether the new system would make the widespread deployment of federal civilians substantially easier than it is currently.

DoD has conducted numerous public/private competitions under the guidelines established in the Office of Management and Budget's Circular A-76 to determine whether in-house military organizations should continue to provide support services at military installations in the United States. Evidence from those competitions suggests that contractors perform some services or functions at a lower cost than military organizations do. They achieve the savings largely by carrying out the same tasks with fewer people.[8] That evidence, however, pertains to peacetime functions performed in the United States and may not necessarily extend to combat operations overseas.

Some people have argued that potential efficiencies from contracting could benefit DoD in another way. Since the end of the Cold War, various DoD initiatives (for example, the Quadrennial Defense Reviews) have looked for ways to increase the military's "tooth-to-tail" ratio—that is, to downsize force structure by shrinking noncombat functions. Contracting out has been viewed by some researchers as one way of focusing military forces on combat operations (the "tooth"). Other researchers have argued that many ancillary functions are not "core" and fall outside military expertise.[9] For that reason, they contend, contractors could provide those functions much more efficiently than military personnel could.

Overseas Status of Forces Agreements and limits on the number of troops that can be deployed to a wartime theater also can create a need for contractor or federal civilian support. For example, during the planning for Operation Desert Storm in 1990, force structure limits on the U.S. Central Command compelled the Army to give higher priority to deploying combat units than to deploying logistics units. As a result, the Army had to rely

5. See, for example, Carla E. Tighe and others, *Case Studies in DoD Outsourcing* (Alexandria, Va.: CNA Corporation, January 1997); Alan J. Marcus and James Jondrow, *Estimates of Potential Competition Savings for Navy Commercial Activities* (CNA Corporation, June 1998); and Peggy A. Golfin, *New Markets for Recruiting Quality Enlisted Personnel* (CNA Corporation, March 1996).

6. See the statement of David S.C. Chu, Under Secretary of Defense (Personnel and Readiness), Department of Defense, before the Subcommittee on Personnel of the Senate Committee on Armed Services, published as Department of Defense, *Active and Reserve Military and Civilian Personnel Programs* (April 5, 2005); and James Kitfield's interview with David S.C. Chu in "Military Manpower: Adjusting to New Stresses," *National Journal*, vol. 36, no. 6 (February 7, 2004).

7. See "National Security Personnel System Proposed Rule," *Federal Register*, vol. 70, no. 29 (February 14, 2005), pp. 7551-7603.

8. Ross Stolzenberg and Sandra Berr, *A Pilot Study of the Impact of OMB Circular A-76 on Motor Vehicle Maintenance Cost and Quality in the U.S. Air Force* (Santa Monica, Calif.: RAND Corporation, 1985); Carla E. Tighe and others, *Outsourcing and Competition: Lessons Learned from DoD Commercial Activities Programs* (Alexandria, Va.: CNA Corporation, October 1996); A.J. Marcus, *Analysis of the Navy's Commercial Activities Program* (CNA Corporation, July 1993); John B. Handy and Dennis J. O'Connor, *How Winners Win: Lessons Learned from Contractor Competition in Base Operations Support* (Bethesda, Md.: Logistics Management Institute, 1994); Christopher M. Snyder, Robert P. Trost, and R. Derek Trunkey, "Reducing Government Spending with Privatization Competitions: A Study of the Department of Defense Experience," *Review of Economics and Statistics*, vol. 83, no. 1 (February 2001), pp. 108-117; and Christopher M. Snyder, Robert P. Trost, and R. Derek Trunkey, "Bidding Behavior in the Department of Defense's Commercial Activities Competitions," *Journal of Policy Analysis and Management*, vol. 20, no. 1 (Winter 2001), pp. 21-42.

9. Laura H. Baldwin, Frank A. Camm, and Nancy Y. Moore, *Strategic Sourcing: Measuring and Managing Performance* (Santa Monica, Calif.: RAND Corporation, 2000); and National Defense Panel, *Transforming Defense: National Security in the 21st Century* (December 1997).

extensively on contractors (and, later, Army civilians) to supplement logistics forces.[10]

Although most of the Army's logistics capability resides in Guard and Reserve units, those units may be slow to arrive in-theater. During Operation Desert Shield, for instance, support units containing 73,000 reservists did not all arrive in-theater until about 200 days after the operation began.[11] Response times improved during Operation Iraqi Freedom: DoD reports that the average lag between activation and arrival in-theater was 158 days for Guard and Reserve battalions and about 60 days for smaller detachments.[12] By contrast, the Logistics Civil Augmentation Program contract requires that performance begin as early as 15 days after the Army notifies the contractor to proceed with a particular task order. Although the LOGCAP contractor has not always met that goal, it has generally responded faster than Army Guard and Reserve units. The difference arises because the process of activating Guard and Reserve units, including predeployment medical and dental examinations, is time-consuming. In addition, Army units generally transport their own equipment to the wartime theater, often via strategic sealift ships, whereas the contractor may be able to purchase much of the required equipment (such as trucks) in the theater itself or in adjoining countries.

Conversely, an argument in support of using Guard and Reserve units (rather than contractors) despite their delayed arrival in the wartime theater could be made on the basis of the Abrams Doctrine. After the Vietnam War, Army Chief of Staff General Creighton W. Abrams advocated placing key wartime support functions in the Guard and Reserve components of the military. Under that doctrine, it is difficult for the Army to engage in large-scale military conflicts without mobilizing Guard and Reserve personnel. Because those mobilizations have major consequences—not only for the personnel themselves, but also for their families, civilian employers, and communities—major conflicts become less likely unless there is strong national support.[13]

10. Dibble, Horne, and Lindsay, *Army Contractors and Civilian Maintenance, Supply, and Transportation Support During Operations Desert Shield and Desert Storm*, pp. 3-2 to 3-3.

11. Congressional Budget Office, *Structuring the Active and Reserve Army for the 21st Century* (December 1997), p. 22.

12. Those figures come from OIF deployment data provided by DoD to the Congressional Budget Office.

Advantages of Uniformed Military Personnel

Military personnel are charged with using force to attain national objectives. But even in tasks that do not require direct combat skills, military personnel will be most effective when integrity of the military chain of command is important or where it may be difficult or costly to protect contractors. For example, one Marine Corps camp in Kuwait initially relied on military personnel to prepare food because the threat of chemical or biological attack was deemed too high to guarantee the safety of host-nation civilians. Once that threat had diminished, contractors were brought in to provide those services.

Military personnel also offer an advantage in that their legal status is relatively clear-cut. Military personnel are subject to the court-martial system if they commit crimes, and they have specific rights under the Geneva Conventions when operating overseas. As discussed in Chapter 1, the legal status of contractors and civilians as noncombatants is less clear.

Although contracting out may be efficient for some functions, it may be costly or inefficient for other functions. In particular, functions for which there are extensive costs involved in setting up, monitoring, and enforcing contracts could make outsourcing a poor option. Critics of outsourcing also point to the inflexibility of contracts that require military commanders to issue change orders to the contract for even minor shifts in tasks.[14]

Advantages of Federal Civilians

Federal civilians may bring distinct advantages to the total mix of personnel deployed overseas. Certain tasks, including policymaking or contracting, may be considered inherently governmental but do not necessarily re-

13. For more on the Abrams doctrine and the current use of the reserves, see John R. Groves, *Crossroads in U.S. Military Capability: The 21st Century U.S. Army and the Abrams Doctrine*, Land Warfare Paper No. 37 (Arlington, Va.: Association of the United States Army, Institute of Land Warfare, August 2001); and Gary C. Howard, *Reinventing the Army Reserve Again*, Landpower Essay No. 04-4 (Arlington, Va.: Association of the United States Army, Institute of Land Warfare, November 2004).

14. Ellen M. Pint and Laura H. Baldwin, *Strategic Sourcing: Theory and Evidence from Economics and Business Management* (Santa Monica, Calif.: RAND Corporation, 1997); and Adebayo Adedeji and Mark Rosen, *The Feasibility of Outsourcing on Aircraft Carriers* (Alexandria, Va.: CNA Corporation, March 2000).

quire military performance. Federal civilians also can operate as equal members of a military staff (at least in some functional areas). In addition, some military leaders may be more comfortable working with federal civilians, who (like military personnel) have sworn to uphold and defend the U.S. Constitution.

There is some evidence that federal civilians may be less costly than military personnel, even excluding rotation-base considerations. One study identified significant savings from "civilianizing" DoD support functions; the savings were attributed to using lower-ranking civilians to replace higher-ranking military personnel. For example, a job formerly being performed by an Army colonel—military rank O-6, which is considered a military equivalent to a civilian GS-15—might be performed by a GS-13 instead.[15]

It may also be more efficient to deploy federal workers overseas if they are performing similar work in the United States. For example, if a weapon system is being maintained by civilians in an Army depot, those employees may be the best people to support or troubleshoot that equipment overseas.

15. General Accounting Office, *DoD Force Mix Issues: Greater Reliance on Civilians in Support Roles Could Provide Significant Benefits*, GAO/NSIAD-95-5 (October 1994).

CHAPTER

3

Options for Providing Logistics Support to Deployed Army Units

In its analysis of approaches to provide logistics support to deployed Army forces, the Congressional Budget Office explored four options that would alter the current mix of military personnel, contractors, and federal civilians. This chapter focuses on two specific options—one using military personnel and another using federal civilians—to provide the logistics support currently procured from private contractors. CBO evaluated the advantages and disadvantages of those two options, including their relative costs as well as considerations of flexibility and legal concerns.

Option 1: Rely More on Military Personnel for Logistics Support

One alternative to the current approach would be to rely more heavily on uniformed military personnel—both active-duty soldiers and mobilized reservists—to provide logistics support to deployed forces. A central focus of CBO's analysis was estimating the incremental costs of using organic sources to carry out functions that the Army now purchases from the contractor Kellogg, Brown & Root through the Logistics Civil Augmentation Program.[1] CBO also took into account those costs that the contractor and the Army would incur to sustain their logistics support capability during peacetime.

To evaluate this option, CBO analyzed Task Order 59, the largest single task order under LOGCAP III. (As of March 2004, the LOGCAP III contract encompassed roughly 90 individual task orders.) Task Order 59 requested a wide range of logistics services for about 130,000 U.S. ground troops and, from June 13, 2003, to June 12, 2004, was projected to cost the Army about $5.2 billion. By December 2004, Task Order 59 employed 51 percent of all LOGCAP personnel worldwide (including foreign nationals and subcontractors).[2] Although Task Order 59 does not represent the totality of LOGCAP III, it is large enough that it should be representative of the relative costs of contractor-provided and Army-provided logistics support.

A distinguishing feature of this option is that the Army would have to dedicate existing units, and in some cases create new units, in order to provide a rotation base for deployed forces. CBO assumes that the rotation base is needed for several reasons. First, the Army offers long-term employment with limited opportunities for lateral entry. To pursue that personnel strategy, the Army recruits primarily high school graduates and trains them to perform required tasks. That training cannot be accomplished if soldiers are on an extended deployment overseas. Regular training is also needed to maintain soldiers' and units' combat readiness. Second, maintenance of soldiers' physical and mental health requires a respite from the stress and danger of extended deployments. Finally, in addition to the hazards associated with such deployments, extended separations from family members could undermine the Army's ability to retain personnel if soldiers were denied the opportunity to rotate back to the United States on a somewhat predictable basis.

1. Incremental costs are those that the Army would have to incur over and above the amounts already budgeted for routine military operations of existing units. The latter include basic pay and peacetime allowances for active-duty military personnel and the routine costs of peacetime training exercises and regular equipment maintenance for existing Army units.

2. Data regarding the number of LOGCAP employees as of December 2, 2004, were supplied to the Congressional Budget Office by Kellogg, Brown & Root.

Although a contractor, too, must maintain its logistics capability during peacetime, its level of effort can be minimal. The contractor does not share the Army's commitment to long-term employment for its employees; indeed, one major advantage of contractor support is the flexibility of contractors' arrangements with their employees. Contractors hire numerous host-country and third-country nationals—to a much greater degree than the military does directly—for whom the term of employment is explicitly temporary (see Table 1-2 on page 5 for specifics about personnel hired under the LOGCAP III contract). Finally, unlike the Army, contractors are much more inclined to make lateral hires of personnel who are already trained. Thus, contractors need not maintain, and the government need not pay for, an extensive training infrastructure.

Determining Equivalent Army Units

To estimate the costs of this option, CBO first examined the statement of work that the Army developed for Task Order 59. That statement describes the specific tasks for which the LOGCAP contractor is responsible, including the number of Army units requiring support, their populations and locations, and the projected starting and ending dates for each discrete logistics function. The Army's force structure contains logistics units that are configured, manned, and equipped to provide most of the services purchased from the contractor. To determine the size and composition of an Army force package that could provide the same services as the contractor, CBO used the following methodology (which is described in greater detail in Appendix A):

- Matched the mission statements of existing types of Army units with each function or service specified in Task Order 59.
- Calculated the number of Army logistics units of each type that would be required to carry out the tasks currently performed by the LOGCAP contractor.
- Determined how many of each type of logistics unit presently exist in the Army's force structure and whether those units are committed to ongoing operations.
- Determined whether new units would have to be created to provide the required support functions or to serve as a rotation base. ("New" units are not new types of units; rather, they are additional units of existing types that must be created when the number of existing units is insufficient.)

CBO estimated the number of units that would be needed to carry out each logistics function by examining Army allocation rules, which state the notional number of troops that a given logistics unit could support; by comparing the workload specified in the LOGCAP contract with notional Army unit productivity; and by studying the precedent offered by previous deployments. In a few instances, rather than considering output, CBO examined the amount and type of equipment utilized by the LOGCAP contractor (for instance, the number of trucks of a certain size or the rated capacity of electrical generators) and then computed the number of Army units that would possess the same amount and type of equipment.

CBO's analysis indicated that the Army would require a total of 177 units of 38 distinct types, populated by 12,067 soldiers (see Table 3-1).[3] Although the bulk of those units would actually carry out the various logistics functions, 10 headquarters units of eight distinct types would provide command and control and integrate the logistics units into the larger Army force structure in-theater. (CBO added headquarters units only when the number of such units already in the Army's divisional structure appeared inadequate in light of the addition of logistics units.)

CBO next determined whether the required number and type of units currently exist in the Army's worldwide force structure (see Table 3-2). The Army's force structure contains 950 units (including both active and reserve units) of the types suitable to provide the functions specified in Task Order 59. However, many of those units are already being utilized in South Korea, Iraq, or Afghanistan. Because the Army's rotation base had to be taken into consideration, CBO removed from the available pool those units currently stationed in South Korea, Iraq, or Afghanistan as well as units stationed in the United States that would ultimately relieve units now serving in

3. Unit types are categorized according to the Standard Requirements Code, an Army taxonomy that designates a unit and a particular version of its Table of Organization and Equipment.

Table 3-1.

Number and Types of Army Units and Troops Required to Provide the Logistics Functions Specified in Task Order 59

Unit Type	Number of Units	Number of Troops
	Command-and-Control Functions	
HHC Air Traffic Services Battalion	1	60
HHC Engineer Brigade	1	115
HHD Explosive Ordnance Disposal Battalion	1	31
HHD Medical Logistics Battalion	1	65
HHD Movement Control Battalion	1	63
HHD Ordnance Battalion (Ammunition)	1	52
HHD Ordnance Maintenance Battalion	1	49
HHD Supply and Service Battalion	3	171
	Logistics Functions	
Air Traffic Services Company	1	101
Air Traffic Support Maintenance Company	1	75
Ammunition Ordnance Heavy Lift Platoon	3	132
Area Movement Control Team	1	16
Cargo Documentation Movement Control Team	1	11
Cargo Transfer Company	1	280
Combat Heavy Equipment Transport Company	1	299
Division Support Movement Control Team	1	10
Explosive Ordnance Disposal Company	10	220
Field Service Company	12	1,476
Firefighting Team	48	336
Firefighting Team Headquarters	8	32
Force Provider Company	10	350
Heavy Engineer Combat Battalion	2	1,314
Heavy Material Supply Company	1	190
Medical Detachment (Blood support)	5	150
Medium Truck Company (20 ft.)	2	348
Medium Truck Company (40 ft.)	2	338
Medium Truck Company (5,000 gal.)	1	170
Movement Control Regulating Team	1	28
Nondivisional Ordnance Maintenance Company	4	800
Petroleum Pipeline and Terminal Company	1	186
Port Movement Control Team	1	21
Preventive Medicine (Sanitation) Detachment	15	150
Prime Power Engineer Battalion	10	2,580
Repair Parts Team	4	216
Subsistence Platoon	7	399
Supply Company	5	625
Utilities Team Engineer Detachment	6	336
Water Purification and Distribution Company	2	272
	All Functions	
Total	**177**	**12,067**

Source: Congressional Budget Office.

Note: HHC = headquarters and headquarters company; HHD = headquarters and headquarters detachment.

Table 3-2.

Army Units and Troops Required to Replace Task Order 59, Including a Rotation Base

	Units	Troops
Number of Army Units and Troops Needed to Provide the Logistics Functions Specified in Task Order 59	177	12,067
Number of Units of Relevant Types Currently in the Army		
Active component	259	26,014
Reserve and Guard components	691	86,421
Total	950	112,435
Number of Units That Are Available and Match Needed Functions		
Active component	39	3,936
Reserve and Guard components	65	2,273
Total	104	6,209
Number of Units the Army Would Need to Create to Fill Unmatched Functions		
Active component	24	2,937
Reserve and Guard components	49	2,921
Total	73	5,858
Number of Units the Army Would Need to Create for Its Rotation Base		
Active component	101	10,638
Reserve and Guard components	693	30,922
Total	794	41,560

Source: Congressional Budget Office.

Iraq and Afghanistan if current conflicts continued.[4] With those units removed, the prospective pool consisted only of two classes of units: units stationed in the United States that do not make up the rotation base for presently deployed units, and units stationed in Europe or the Pacific region. (The latter units are included because they are not currently involved in contingency operations and could potentially be reassigned to Iraq.)

Calculating the Rotation Base

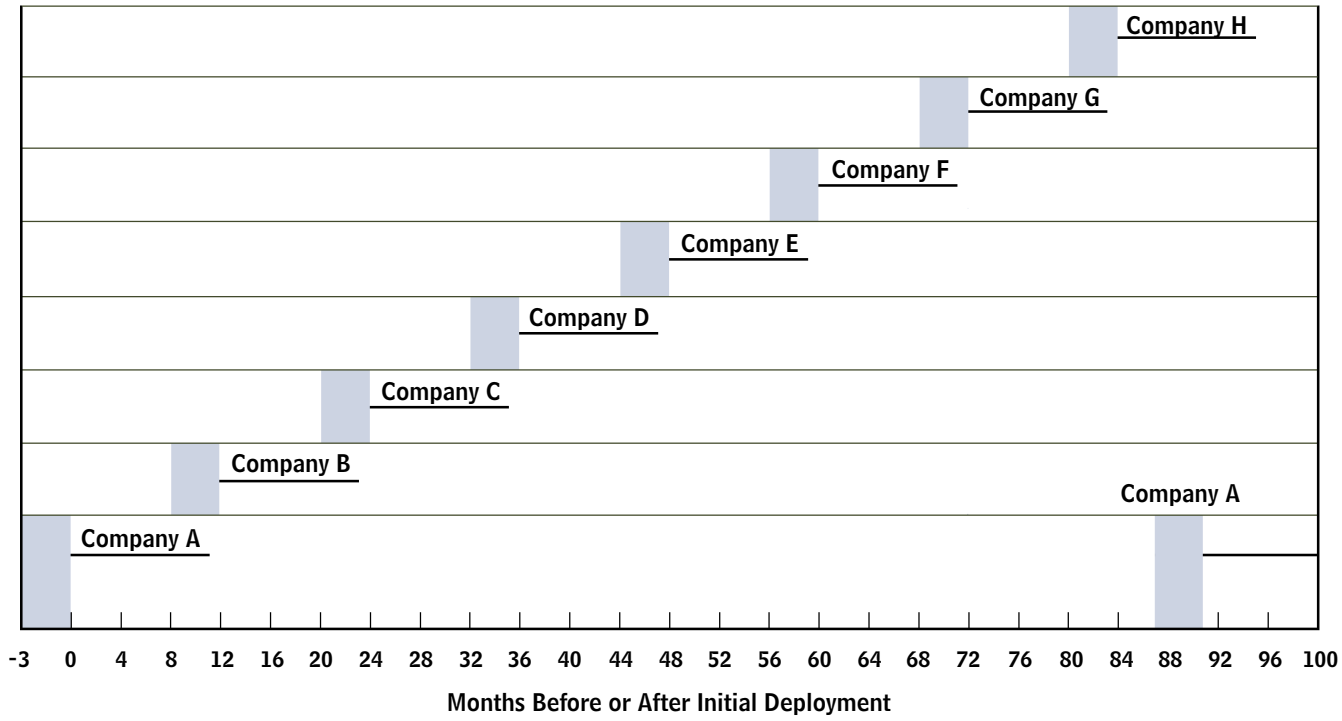
The Army's goal is that, at any given time, only one-third of active units should be deployed, while the remaining two-thirds of the force structure resides in the rotation base.[5] Indeed, some Army officials have argued that the goal should be made more stringent so that as few as one-fourth, or even only one-fifth, of active Army units are deployed at any point. CBO conducted its analysis on the basis of the assumption that the Army would adhere to at least the first of those goals (henceforth referred to as the austere rotation goal), so that each active unit currently deployed would be supported by a rotation base consisting of a minimum of two nondeployed units.

4. Unit rotation is different from the individual-rotation policy that was employed during World War II, the Korean War, and the Vietnam War and is still in use in South Korea and Europe. Individual rotation maintains the same unit in-theater over time but moves individual soldiers into and out of the unit. Thus, Army units stationed in South Korea do not require rotational counterparts in the United States.

5. According to Pamela Hess of United Press International, General Richard Cody, Vice-Chief of Staff, U.S. Army, made the following response to a question during a hearing before the House Armed Services Committee, Military Personnel Subcommittee, on February 2, 2005: "For active duty forces, the goal is to have soldiers in combat deployment for one year and then in garrison for two years. If the deployments are more frequent than that, the Army could have a hard time recruiting and retaining adequate numbers of soldiers and the all-volunteer force may be in jeopardy." See "Reserves May Get Extended Deployments," *Washington Times*, February 3, 2005, available at www.washingtontimes.com/upi-breaking/20050202-074855-4389r.htm.

Figure 3-1.

Rotational Scheme for Reserve Logistics Units in a Contingency Operation



Source: Congressional Budget Office.

Note: Shaded areas indicate predeployment training, and bold lines indicate deployments.

Although CBO recognizes that the Army is not meeting all of its rotation goals for units currently deployed to Iraq and Afghanistan, the analysis did not include the incremental cost of creating additional units to make up shortfalls in the rotation base for currently deployed units. Still, CBO notes that other costs are likely to arise in the future if active Army units either deploy more frequently than the goal of one year out of three or remain overseas longer than the goal of 12 consecutive months. In either case, extended family separation could degrade the morale of soldiers and adversely affect troop retention levels, possibly requiring offsetting increases in bonuses or other compensation incentives for personnel.

The computation of the rotation base is slightly more complex for reserve-component units. For the purposes of this analysis, CBO assumed that those units—like their active-component counterparts—would serve 12-month tours overseas. However, unlike active-component units that undergo continuous training while in the rotation base, reserve units must be activated for about three months of training immediately before a deployment. In a July 9, 2003, memorandum titled "Rebalancing Forces," Secretary of Defense Donald H. Rumsfeld stated that the Department of Defense should "limit involuntary mobilization [of reserve units] to reasonable and sustainable rates, using not more than one year in every six as the planning metric."[6] One interpretation of that goal is that just one-sixth of Army National Guard and Reserve units should be deployed at any point. However, a Guard or Reserve unit that deployed for 12 months every sixth year would actually be mobilized for a total of 15 months (including the requisite three-month predeployment training period) every six years, or 21 percent of the time (15 months out of every 72 [6 x12] months). A more stringent interpretation of the Secretary's goal would reduce the portion of time mobilized to exactly one-sixth, or 17 percent (see Figure 3-1). That

6. Memorandum for Secretaries of the Military Departments, Chairman of the Joint Chiefs of Staff, and Under Secretaries of Defense; as quoted in Office of the Deputy Assistant Secretary of Defense for Reserve Affairs (Readiness, Training, and Mobilization), *Rebalancing Forces: Easing the Stress on the Guard and Reserve* (January 15, 2004), available at www.defenselink.mil/ra/documents/rebalancingforcesfinalfinald1.pdf.

interpretation would require that the reserve component contain a total of 7.5 units for every unit deployed (illustrated in Figure 3-1 by companies A through H), or 6.5 units in the rotation base for every unit deployed. For example, Company A would be mobilized for training three months prior to a contingency (indicated by the shaded bar starting at month -3), then deployed for 12 months of the conflict, for a total of 15 months. To limit mobilization to 17 percent of the time over the long run, those 15 months of mobilization would have to be followed by 75 months (5x15) demobilized. Thus, Company A would not be mobilized again until month 87 of the contingency (if it lasted that long). To assure continuous coverage during the conflict, seven additional companies (B though H) would have to exist in the hypothetical force structure.

If the Army knew in advance that no single conflict would exceed, say, five years, it would not need to maintain as many as 6.5 reserve units in the rotation base for each unit deployed; a rotation base of only four companies (B through E) would suffice (see Figure 3-1). However, the precise sequence of future conflicts cannot be predicted. If the reserve component contained a total of only five companies, and if a given conflict extended into a sixth year, Company A would have to be mobilized again in month 57 of the conflict and deployed overseas in month 60, as opposed to the goals of not mobilizing again until month 87 and then deploying in month 90. The former pattern would have Company A mobilized 25 percent of the time, as opposed to the goal of 17 percent. To ensure that the mobilization period did not exceed 17 percent, regardless of the length of future conflicts, the rotation base would have to contain 6.5 reserve units for every deployed unit.

Results of the Calculations

Even with both the deployed units and their rotation base removed from consideration, not all units remaining in the available pool would be appropriate for replacing the LOGCAP contractor because of mismatches between the unit types in the pool and the specific contract tasks. After analyzing the potential matches, CBO determined that 39 active units and 65 reserve units could provide 104 of the required 177 units (see Table 3-2 on page 30). The remaining 73 units needed to perform the functions in Task Order 59 would have to be created.

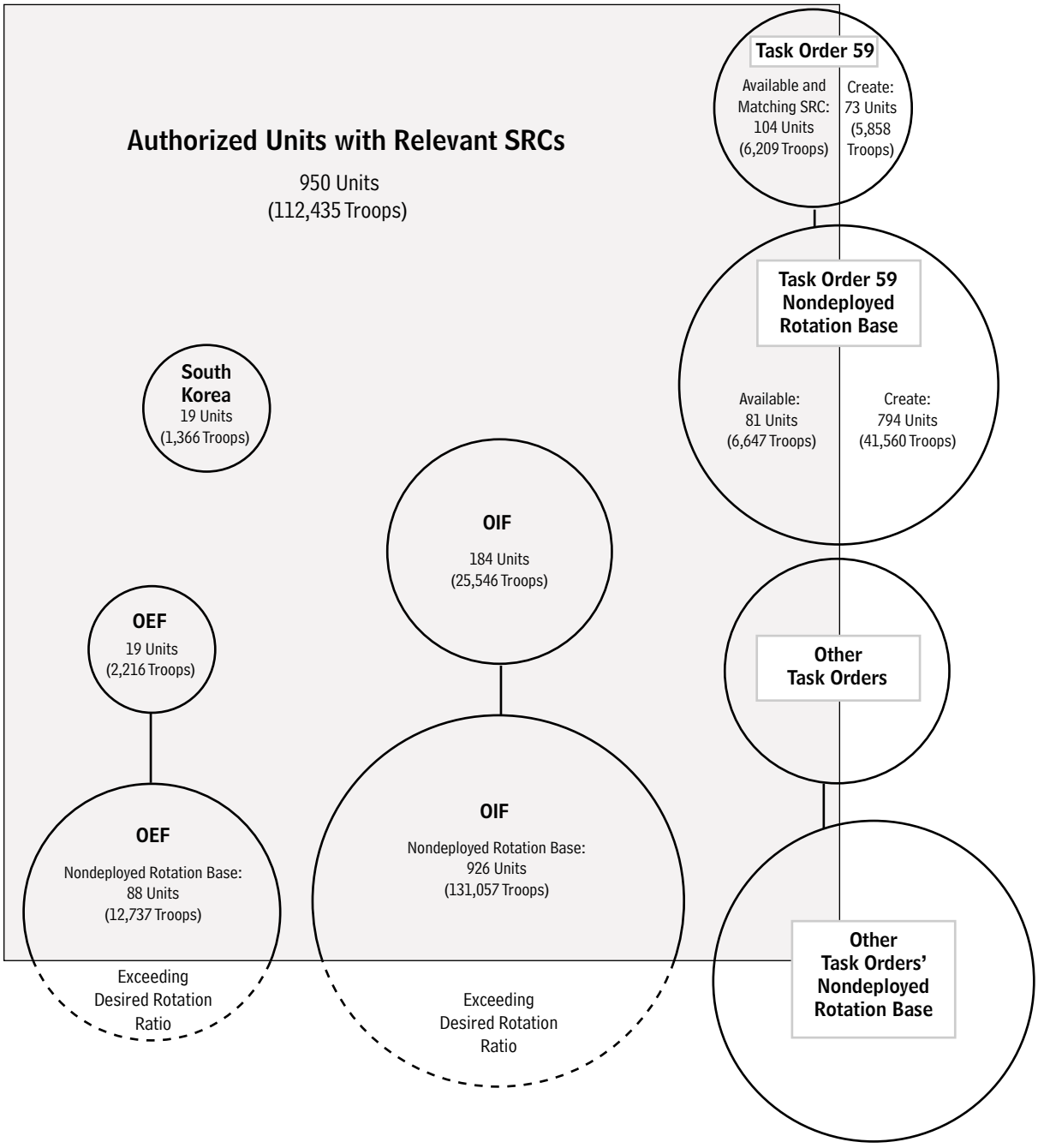
Finally, the Army would have to create new rotation units, both to support the 73 units that would have to be created to perform the contract functions and to support some of the 104 existing units in the pool that are available to deploy but lack an adequate rotation base. According to CBO's estimates, a total of 794 units (101 active and 693 reserve units) would have to be created, populated by 41,560 soldiers. (See Appendix B for a discussion of the calculations used to determine the number of existing and new units that would be required for a single illustrative type of Army unit, field service companies.)

Figure 3-2 provides a global depiction of the calculations encompassing all unit types required to meet the Army's logistics mission. The rectangle in Figure 3-2 represents the 950 units currently existing in the Army's worldwide force structure that possibly could provide the functions specified in Task Order 59. Of those 950 units, 19 are already committed to South Korea, 19 to Afghanistan, and 184 to Iraq. Also depicted in the connected circles are the rotation bases for the units committed to Afghanistan and Iraq (calculated separately depending on whether each unit belongs to the active or reserve component). A portion of the rotation base for units assigned to Afghanistan and Iraq lies outside the Army's worldwide force structure, reflecting the fact that the Army is not able to adhere to its rotation goals. However, CBO's analysis does not include the costs of creating additional units to meet the rotation goals for existing deployments to Afghanistan and Iraq. Those rotation base units would be missing from the current force structure whether or not the Army implemented Option 1, and CBO chose not to attribute the cost of creating those new units to the Army's decision on that option.

The Army could provide the services enumerated in Task Order 59 by utilizing 104 existing, uncommitted units and creating 73 new units. (The latter lie in the upper righthand corner of Figure 3-2, outside the rectangle denoting the existing force structure.) In an effort to hold the mix of active and reserve units as constant as possible, CBO assumed that new units would be created in proportion to the current active/reserve mix within each Standard Requirements Code. However, the 81 remaining units with matching Standard Requirements Codes would be inadequate to provide a rotation base for both the existing and new logistics support units. An additional 794 units would have to be created for that purpose. (Table 3-3 summarizes the number of active and reserve units needed to carry out the functions in Task

Figure 3-2.

Could the Army Perform the Functions in LOGCAP Task Order 59?



Source: Congressional Budget Office based on data about authorized units and associated troop levels for fiscal year 2006 from the Army's WebTAADS database.

Notes: Figure is not drawn to scale.

LOGCAP = Logistics Civil Augmentation Program; SRCs = Standard Requirements Codes; OEF = Operation Enduring Freedom (Afghanistan); OIF = Operation Iraqi Freedom (Iraq and Kuwait).

Table 3-3.

Summary of Army Units Needed to Replace Task Order 59

	Active Component	Reserve and Guard Components	Total
Units Needed to Perform Logistics Functions			
Existing	39	65	104
New	24	49	73
Total	63	114	177
Nondeployed Rotation Base			
Existing	25	56	81
New	101	693	794
Total	126	749	875
Total Army Units			
Existing	64	121	185
New	125	742	867
Total	189	863	1,052

Source: Congressional Budget Office.

Order 59 and to serve as a nondeployed rotation base for both existing units and the new units that would have to be created.)

The calculations used thus far assume that the Army satisfies only its most austere rotation goals, mobilizing 17 percent of reserve units and deploying 33 percent of active units at any time.[7] Alternative rotation goals would have units deploying less often, thus necessitating a larger rotation base and requiring that even more units be created. Suppose that the Army pursued alternative goals of mobilizing only 11 percent of reserve units and deploying only 20 percent of active units at any point. Then the Army would require 10.25 rotational units for each reserve unit and four rotational units for each active unit needed to perform the functions in Task Order 59. The larger rotation base would reduce the available pool, so the Army would need to create 89 units (instead of 73) with 7,486 troops to perform the functions. And the Army would need to create an additional 1,255 units (instead of 794) with 78,424 troops to provide a rotation base for the existing and new units performing the tasks.

If the Army ignored its rotation goals completely, it would need to create only 25 units (instead of 73) with 2,538 troops to perform the functions. However, 10 of the 38 relevant unit types would have all of their units deployed at all times (in other words, there would be no rotation base at all), and only two of the 38 unit types would meet even the austere rotation goals.

Comparing the Contractor's and the Army's Costs

The relative costs of using either organic Army support units or a commercial contractor would vary with both the frequency and duration of contingency operations over any fixed interval. The notional scenario that CBO developed alternates five-year wartime periods with five-year peacetime periods over a total horizon of 20 years. To test whether its major findings are sensitive to the specifics of that scenario, CBO also examined seven other scenarios. The results for those alternative scenarios are shown later in this chapter, after the results for the base-case scenario.

CBO compared the contractor's estimated costs of executing LOGCAP Task Order 59 with CBO's estimates of the incremental costs of having Army units provide those same functions. In interviews with CBO, representatives from Kellogg, Brown & Root suggested that the contractor could acquire goods and services in Iraq faster and at a lower cost than the Army could because of its experience and efficient contracting process. KBR also asserted that some of the goods and services it provided were of higher quality than the Army could have provided with its own logistics support units. For example, in previous estimates of the cost of contingency operations, CBO assumed that the Army would provide each deployed soldier with daily sustenance consisting of two meals, ready to eat (MREs) and one B-ration (canned or dehydrated foods that require minimal preparation, no refrigeration, and are packaged together in amounts sufficient to feed 50 to 100 soldiers).[8] By contrast, KBR delivers troops four daily meals consisting mostly of fresh foods that would require refrigeration and more intensive preparation than would B-rations, at a daily cost of $26 per person. In situations such as that, CBO adjusted the Army's costs upwards to reflect the cost of providing a level of quality equal to that

7. Ranges for the Army's rotation goals are reported in Congressional Budget Office, *An Analysis of the U.S. Military's Ability to Sustain an Occupation in Iraq* (September 3, 2003), pp. 34-39.

8. See Congressional Budget Office, *Estimated Costs of Continuing Operations in Iraq and Other Operations of the Global War on Terrorism* (June 25, 2004). See also Congressional Budget Office, *Estimated Costs of a Potential Conflict with Iraq* (September 30, 2002).

being provided by KBR. CBO applied those adjustments wherever possible, but some differences may remain between the quality of services provided by the two sources.

Although the concept of quality is often difficult to measure, it should be noted that Army personnel have given favorable reviews of KBR's services in the Balkans, Afghanistan, and the Middle East. For example, an Army major who served as a team leader for the Defense Contract Management Agency in the Balkans during 2001 called KBR's performance in the Balkans excellent "across the spectrum of services."[9]

In May 2003, following the U.S. military invasion of Iraq, the Army directed the contractor to proceed with implementing Task Order 59. CBO analyzed the duties specified in the task order as of March 10, 2004. By that date, the Army had issued seven major "change orders" that altered the contractor's duties and scope of work and issued 1,400 minor changes (called letters of technical direction) to various versions (as amended by cumulative change orders) of the statement of work. The various change orders reflected such factors as the addition of new tasks, fluctuations in the number of soldiers supported, and shifts in the location of campsites. There were no additional major change orders to Task Order 59 after March 10, 2004, although the stream of minor changes did continue. In estimating the cost of performing the work required by Task Order 59, CBO assumed that the scope of work under the contract would not change further during the period of analysis.

Other factors could also cause costs to vary from those estimated in this study. For example, the hardship and risk of working in Iraq might increase the contractor's costs for insurance and personnel compensation. Conversely, costs might be lower than estimated here if the contractor became more efficient over time in providing logistics services. For example, to quickly provide services to the Army in Iraq, KBR initially leased much of its equipment. As operations in Iraq continue, the contractor might purchase those items to reduce recurring costs if the duration of the operation justifies the investment. (In fact, KBR reported that, as of December 2004, the actual costs of implementing Task Order 59 were lower than the amounts originally estimated when work began in June 2003.) Thus, the actual costs for work performed under Task Order 59 since March 10, 2004, will undoubtedly differ from the estimates shown in this report.

In addition to the statement of work for Task Order 59, Kellogg, Brown & Root provided CBO with information from its rough-order-of-magnitude (ROM) cost estimate. The definitized costs for Task Order 59 were not yet available when CBO performed this analysis. The costs in the ROM estimate were expressed at a fine level of detail but were subject to change during the contract's period of performance. In its ROM cost estimate dated March 10, 2004, KBR provided its projected costs under Task Order 59 for a 12-month period—June 13, 2003, through June 12, 2004. For that one-year period, KBR projected a total cost of $5.2 billion. The contractor also provided a detailed breakdown of the estimated costs incurred at 10 particular sites in the Iraqi theater. Because those estimates were for work performed in 2003 and 2004, CBO inflated the costs to 2005 dollars for this analysis.

If the Army provided the logistics support specified in Task Order 59, it would have to pay some of the same start-up costs that Kellogg, Brown & Root incurred under the LOGCAP contract. For example, when estimating the costs of deploying Army construction units, CBO used Army data on operating costs that did not include expenditures for construction materials. To capture those costs, CBO added KBR's estimate of materials costs to CBO's estimate of total Army costs. Similarly, KBR hires foreign nationals to perform many tasks, and the Army might follow suit rather than assign soldiers to tasks such as groundskeeping and housecleaning. Thus, when CBO states that the Army could perform the work in Task Order 59 using 12,067 soldiers (see Table 3-1 on page 29), the total number of personnel required (including foreign nationals) would actually be larger. But whereas KBR hires some foreign nationals on an individual basis, it hires others through subcontractors or labor brokers. Therefore, CBO adopted some of KBR's subcontract costs (denominated in dollars) without knowing the exact number of workers hired under those subcontracts. In terms of dollar costs, CBO added a total of $18.7 billion of the contractor's estimated costs for equipment, facilities, materials, and subcontracts to the estimate of the Army's costs for assuming the logistics mission over the 20-year scenario.

Contingency operations typically extend for more than one year. Therefore, the costs incurred during any single

9. George Cahlink, "Army of Contractors," *Government Executive Magazine* (February 2002), available at www.govexec.com/features/0202/0202s5.htm.

year (for instance, the period for which Kellogg, Brown & Root provided detailed data) are possibly misleading because they do not correctly account for the pattern of higher up-front costs followed over the long run by lower recurring costs. To obtain a more complete and accurate picture of the relative costs over time of a LOGCAP contractor versus organic Army units, CBO also estimated the costs of each approach using a 20-year scenario in which the Army would engage in alternating five-year cycles of contingency operations and routine peacetime operations. To determine the sensitivity of the cost comparisons to that particular scenario, CBO then examined the costs associated with seven other scenarios involving conflicts of different duration and frequency.

Although logistics requirements will differ somewhat between any two operations, to simplify the analysis, CBO assumed in its base-case scenario that identical logistics services would be required in both periods of contingency operations. If the requirements of the second operation differed so dramatically from those of the first that the Army needed additional units to perform the work, the delay in and expense of manning and equipping those new units would lead to higher Army costs than CBO estimates in this study.

Results of the Cost Comparisons

According to CBO's estimates, obtaining logistics support from a LOGCAP contractor would cost about $41 billion (in 2005 dollars) over the 20-year period assumed for this study. Obtaining the same services using Army units would cost about $78 billion—roughly 90 percent more (see Figure 3-3). CBO estimates that in the first year of the 20-year scenario, the Army's up-front costs for acquiring personnel and equipment to outfit new Army units would exceed the LOGCAP contractor's up-front costs by about $4 billion. CBO estimates that during each subsequent year of contingency operations (except the first year of the second contingency operation), the cost of using Army units would be about $1.6 billion higher than the cost of using the LOGCAP contractor. (The more-rapidly accumulating Army costs are reflected in Figure 3-3 by the fact that the Army's cumulative cost line is steeper than the dashed LOGCAP cost line throughout the contingency periods.) Finally, in the first year of the second contingency operation, the Army's costs would exceed LOGCAP costs by only about $100 million.

Both the Army and the LOGCAP contractor would have to purchase equipment to support both the first contingency operation and any subsequent contingency operations. Some of that equipment—items such as high-capacity ice-making plants, waste incinerators, and wastewater treatment equipment—is not routinely allotted to Army logistics units. Those items are not available through the federal supply system or built to military specifications and would have minimal salvage value at the end of the operation compared with the costs of shipping the items back to the United States. The LOGCAP contractor would purchase essentially the same equipment, which it could use during the operation but which would become the property of the U.S. government. CBO assumed that, whether the equipment was used by Army logistics units or by the LOGCAP contractor, the Army would dispose of the equipment at the end of the first contingency operation (for instance, by donating it to the host country); thus, it would not be available for use in the second contingency.

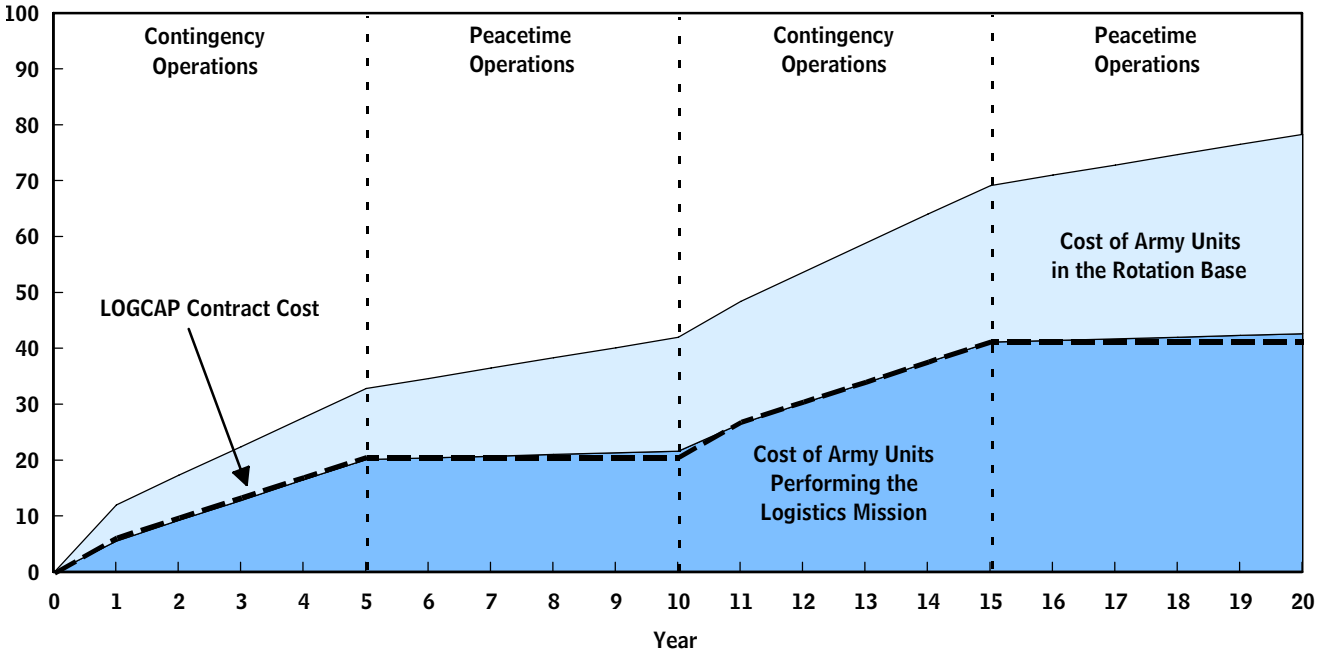
However, CBO assumed that the Army would retain any standardized military equipment that is listed in the logistics units' Table of Organization and Equipment. So, if the Army created new units to provide logistics support before the first contingency operation, any standardized equipment acquired to outfit those units would be available for the second contingency operation. Because the Army would have access to that equipment, its cost of providing logistics support (excluding the rotation base) during the first year of the second contingency operation would be about $1.4 billion lower than the LOGCAP contractor's cost. (That difference is reflected in Figure 3-3 by the steeper slope of the dashed LOGCAP cost line during that one year.) When the rotation base is included, though, that advantage disappears and the Army's total cost for that year exceeds the LOGCAP cost by about $100 million, CBO estimates.

During peacetime, the Army would not be providing either organic or contracted logistics support to deployed units. Kellogg, Brown & Root would still need to update its deployment plans and maintain its lists of vendors for supplies and equipment. However, CBO estimates those costs at only a few million dollars each year, or slightly less than $100 million over the entire 20-year scenario. (The dashed LOGCAP cost line in Figure 3-3 is essentially horizontal during peacetime, indicating that virtually no contract costs are being accumulated.) By contrast, the Army would spend nearly $2 billion per year

Figure 3-3.

Comparison of Cumulative Incremental Costs for Providing Logistics Support to Deployed Army Forces Using Two Approaches

(Billions of 2005 dollars)



Source: Congressional Budget Office.

Note: LOGCAP = Logistics Civil Augmentation Program.

during those periods to man, train, operate, and maintain the new units added to its force structure.

The total costs over the 20-year scenario can be divided into four categories: onetime costs, periodic contingency costs (those paid at the onset of each contingency operation), annual contingency costs, and routine operating costs (see Table 3-4).[10] Those costs represent an aggregation over all 38 unit types that the Army would use to duplicate the LOGCAP contractor's services. To illustrate the underlying cost calculations for a single Army unit type, Appendix B describes the calculations for field service companies.

Reflecting the assumption that the Army requires a rotation base, CBO generated a two-tiered estimate of the costs of providing logistics services with Army support units: the costs for units deployed to provide logistics services and the costs for the additional units needed to maintain a rotation base (see Table 3-4). CBO estimates that existing Army units that provide logistics services incur periodic costs of about $0.7 billion and annual contingency costs of $1.7 billion. The additional Army units that would need to be created to provide logistics services would incur periodic costs of $0.6 billion and annual contingency costs of $1.6 billion. CBO also estimates that it would cost $700 million to man and equip those additional units and another $300 million per year to operate them on a routine basis. Finally, CBO estimates that the additional units needed for the rotation base would cost $5.0 billion to man and equip and another $1.5 billion per year for routine operations.

10. Routine operating costs are those incurred to maintain the training and readiness levels of both existing and new units. During peacetime, those are the only costs incurred. CBO treated the routine operating costs as though they were still incurred during contingency periods; the annual contingency costs were then measured as the excess costs above those routine levels. According to that methodology, funding for routine costs may be thought of as paying for a portion of the total costs incurred during contingency periods.

Table 3-4.

Comparison of Incremental Costs for Two Approaches to Providing Logistics Support to Deployed Army Units

(Billions of 2005 dollars)

	Onetime Costs[a]	Periodic Contingency Costs[b]	Annual Contingency Costs[c]	Annual Routine Operating Costs[d]	20-Year Total
Logistics Support Provided by LOGCAP Contractor					
Nonrecurring costs	n.a.	2.7	n.a.	n.a.	5.4
Recurring costs	n.a.	n.a.	3.6	*	36.0
Total	**n.a.**	**2.7**	**3.6**	*	**41.4**
Logistics Support Provided by Army Units					
Costs to perform mission					
Contingency operations costs (Existing units)	n.a.	0.7	1.7	n.a.	18.5
Acquisition costs (Additional units)	0.7	n.a.	n.a.	n.a.	0.7
Routine operations costs (Additional units)	n.a.	n.a.	n.a.	0.3	5.9
Contingency operations costs (Additional units)	n.a.	0.6	1.6	n.a.	17.6
Subtotal	0.7	1.3	3.4	0.3	42.7
Costs to provide rotation base					
Acquisition costs (Additional units)	5.0	n.a.	n.a.	n.a.	5.0
Routine operations costs (Additional units)	n.a.	n.a.	n.a.	1.5	30.7
Subtotal	5.0	n.a.	n.a.	1.5	35.7
Total	**5.7**	**1.3**	**3.4**	**1.8**	**78.4**

Source: Congressional Budget Office.

Note: LOGCAP = Logistics Civil Augmentation Program; n.a. = not applicable; * = less than $50 million per year.

a. Onetime costs include the hiring and training of personnel and the acquisition of equipment for additional Army units. Those costs would be incurred only in the first year, when the Army decided to provide logistics services in-house. CBO assumed that existing units would already be fully equipped; thus, there would be no acquisition costs for those units. Equipment replacement is included under annual contingency and routine operating costs.

b. Periodic contingency costs occur in the first year of each contingency operation and include the costs to procure equipment and construct facilities needed specifically for that operation.

c. Annual contingency costs occur in each year of a contingency operation, or for 10 years during the period of this analysis.

d. Routine operating costs occur each year—or 20 times during the period of this analysis. Routine operating costs for the LOGCAP contract are only a few million dollars each year. Half of the routine operating costs for additional units would be incurred during periods of contingency operations. Funding for those routine costs could be used to pay for a portion of the costs of contingency operations. Routine peacetime operating costs for existing units are excluded from this analysis. Those costs, though incurred by the Army, are already included in the Army's peacetime budget and would not be affected by the Army's decision to provide logistics services using Army units.

Another cost breakout helps illustrate CBO's findings (see Table 3-5). Some 177 Army units could provide the logistics services furnished under Task Order 59. Those units alone, without any rotation base, would cost a total of $1.3 billion more than it would cost to pay the LOGCAP contractor over the 20-year period considered in this analysis. Decomposing that total, onetime and periodic contingency costs—including the Army's costs to man, equip, and field the 73 new units needed to perform the work currently provided by Kellogg, Brown & Root—would amount to $3.2 billion, or $2.2 billion (40 percent) less than the LOGCAP contractor's cost. Recurring contingency costs for the 177 Army units would total $33.6 billion, or $2.3 billion less than the LOGCAP contractor's cost. Although incremental routine costs incurred by the Army would be many times greater than

Table 3-5.

Comparison of Incremental Costs Over 20 Years

(Billions of 2005 dollars)

	Onetime[a] and Periodic Contingency Costs[b]	Recurring Contingency Costs[c]	Recurring Routine Costs[d]	20-Year Total
Logistics Support Provided by LOGCAP Contractor	5.4	35.9	0.1	41.4
Logistics Support Provided by Army Units				
Costs to perform mission				
Existing units	1.4	17.1	0	18.5
New units	1.8	16.5	5.9	24.2
Subtotal, direct costs	3.2	33.6	5.9	42.7
Costs to provide rotation base	5.0	n.a.	30.7	35.7
Total Army Costs	8.2	33.6	36.6	78.4
Difference in Direct Costs[e]	-2.2	-2.3	5.8	1.3
Difference in Total Costs[f]	**2.8**	**-2.3**	**36.5**	**37.0**

Source: Congressional Budget Office.

Note: LOGCAP = Logistics Civil Augmentation Program; n.a. = not applicable.

a. Onetime costs include the hiring and training of personnel and the acquisition of equipment for additional Army units. Those costs would be incurred in the first year, when the Army decided to provide logistics services in-house.

b. Periodic contingency costs occur in the first year of each contingency operation and include the costs to procure equipment and construct facilities needed specifically for that operation.

c. Recurring contingency costs for two five-year contingency periods.

d. Costs for 20 years of routine operations. For existing units, those costs would be included in the Army's peacetime budget and would not be incremental to bringing the logistics functions in-house. For new units, half of those costs would be incurred during contingency operations.

e. Direct costs are those to provide logistics services excluding the incremental costs of the Army's rotation base.

f. Total costs are those to provide logistics services including the incremental costs of the Army's rotation base.

the cost of hiring the LOGCAP contractor—$5.9 billion compared with less than $100 million—total costs for Army units delivering logistics support would be only $1.3 billion more than total costs under the LOGCAP contract over the 20-year period. Given the inherent uncertainty in both the Army's and KBR's data, as well as uncertainty in the scenario of contingency and peacetime periods, that $1.3 billion difference ($41.4 billion for LOGCAP versus $42.7 billion for the Army) is probably within the margin of error of the cost estimates.

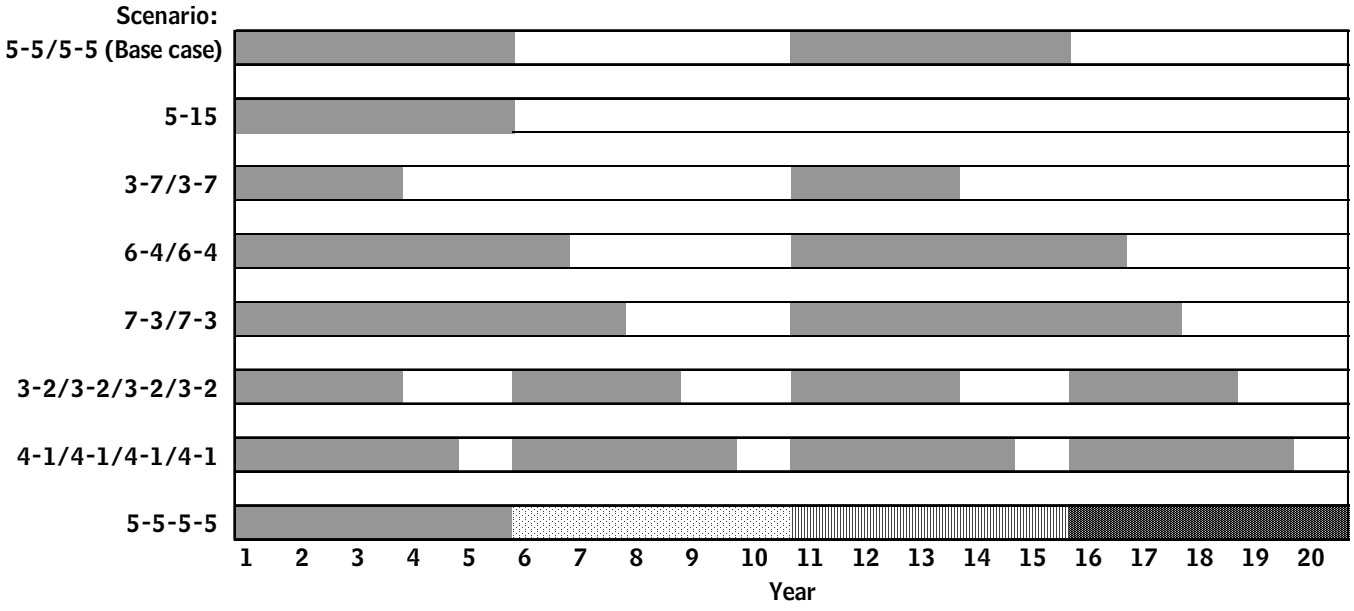
When the costs of creating and maintaining the additional 794 Army units needed for the rotation base are considered, however, the total costs of using Army units become much higher than those incurred for LOGCAP. CBO estimates that the costs to man, equip, and operate those units would total $35.7 billion over 20 years. Thus, the Army's incremental costs would be considerably higher than the contractor's because—unlike the contractor—the Army would have to retain in its force structure the units and personnel needed to perform logistics support.

Sensitivity to Wartime Scenario

It is not possible to predict the frequency and duration of contingency operations over a 20-year period. So in addition to its baseline scenario—in which the Army would engage in a 20-year cycle of alternating contingency operations and routine peacetime operations, each lasting five years—CBO also estimated costs for the following alternative scenarios over the same 20-year period (see Figure 3-4):

Figure 3-4.

Scenarios for Contingency and Peacetime Operations



Source: Congressional Budget Office.

Note: Shading indicates periods of contingency operations, and white space indicates periods of normal peacetime operations. Different shading patterns distinguish consecutive operations at different locations.

- One contingency operation lasting five years, followed by a 15-year period of routine peacetime operations (5-15);
- Two 10-year cycles, each consisting of a three-year contingency operation followed by seven-year intervals of routine peacetime operations (3-7/3-7);
- Two 10-year cycles, each consisting of a six-year contingency operation followed by routine peacetime operations lasting four years (6-4/6-4);
- Two 10-year cycles, each consisting of a seven-year contingency operation followed by three years of routine peacetime operations (7-3/7-3);
- Four five-year cycles, each consisting of a three-year contingency followed by two years of routine peacetime operations (3-2/3-2/3-2/3-2);
- Four five-year cycles, each consisting of a four-year contingency period followed by one year of routine peacetime operations (4-1/4-1/4-1/4-1); and
- Four consecutive five-year contingency operations, each in a different part of the world (5/5/5/5).

For all of those alternative scenarios, CBO estimates that the cost of obtaining logistics support from Army units—including the cost of maintaining units in the rotation base—would exceed the cost of obtaining those services from the LOGCAP contractor by between $31.8 billion and $41.5 billion (see Table 3-6). If the cost of the rotation base was excluded, the costs of providing logistics support using organic Army sources could be either more or less than the costs incurred under the LOGCAP contract depending on the duration of contingency operations. In general, the more time the Army spends engaged in contingency operations, the more cost-effective it becomes to obtain logistics services from Army units. For instance, CBO estimates that if contingency operations continued for more than 50 percent of the period of analysis, the cost of the LOGCAP contract would exceed the costs for Army units deployed to provide logistics support (not counting the rotation base)—by nearly $4 billion in the case of continuous contingency operations over the entire period. However, the relative efficiency of Army units during extended periods of contingency operations

Table 3-6.

Sensitivity of Army Costs to Various Wartime Scenarios Over 20 Years

(Billions of 2005 dollars)

	Alternating Wartime-Peacetime Scenarios, in Years							
	5-5/5-5 (Base Case)	5-15	3-7/3-7	6-4/6-4	7-3/7-3	3-2/3-2/ 3-2/3-2	4-1/4-1/ 4-1/4-1	5-5-5-5
Percentage of Time at War	**50**	**25**	**30**	**60**	**70**	**60**	**80**	**100**
Logistics Support Provided by LOGCAP Contractor	41.4	20.7	23.5	48.6	55.7	54.0	68.4	82.7
Logistics Support Provided by Army Units								
Costs to perform mission								
Existing units	18.5	9.2	11.6	21.9	25.3	23.3	30.1	37.0
New units	24.2	15.4	17.6	27.5	30.8	28.7	35.3	41.8
Subtotal, direct costs	42.7	24.7	29.3	49.4	56.1	51.9	65.4	78.8
Costs to provide rotation base	35.7	35.7	35.7	35.7	35.7	35.7	35.7	35.7
Total Army Costs	78.4	60.4	65.0	85.2	91.9	87.7	101.1	114.5
Difference in Direct Costs[a]	1.3	3.9	5.8	0.9	0.4	-2.1	-3.0	-3.9
Difference in Total Costs[b]	**37.0**	**39.7**	**41.5**	**36.6**	**36.1**	**33.7**	**32.7**	**31.8**
Memorandum:								
Ratio of Total Army Costs to LOGCAP Costs	1.90	2.91	2.77	1.75	1.65	1.62	1.48	1.38

Source: Congressional Budget Office.

Notes: LOGCAP = Logistics Civil Augmentation Program.

Figure 3-4 describes the various scenarios.

All costs are incremental to the Army's peacetime budget.

a. Direct costs are those to provide logistics services excluding the incremental costs of the Army's rotation base.

b. Total costs are those to provide logistics services including the incremental costs of the Army's rotation base.

is not enough to offset the costs associated with establishing and maintaining a rotation base to relieve deployed Army units.

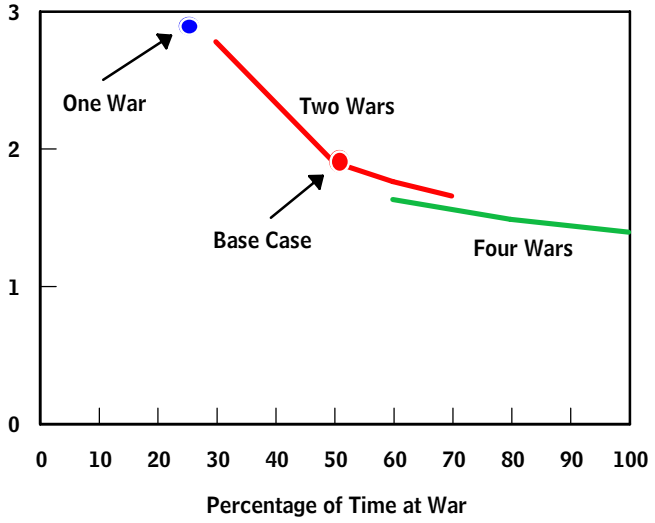
When the Army spends a greater percentage of time engaged in contingency operations, the cost disadvantage of organically providing logistics services declines relative to the cost of obtaining those services from a contractor. The Army's cost disadvantage would also be lower if contingency operations occurred more frequently during a given period, because start-up costs for each contingency are slightly higher for the LOGCAP contract. For example, in the two scenarios in which contingency operations occur 60 percent of the time, the ratio of Army costs to LOGCAP costs would be lower if there were four contingencies during that time rather than just two (see Figure 3-5). If contingency operations continued for only five years after the Army had acquired all of the military personnel and equipment needed to provide the logistics services required by Task Order 59, the Army's total costs would be nearly three times the contractor's costs over 20 years. At the opposite extreme, if the Army experienced 20 years of uninterrupted contingency operations (albeit at four different locations in sequence), the cost of obtaining logistics services from Army units would exceed the cost of obtaining them through the LOGCAP contract by only 38 percent.

In addition to the wartime scenario, CBO's cost analysis relied on several other key assumptions. In particular,

Figure 3-5.

Sensitivity of Relative Army Costs to Wartime Scenarios

(Ratio of Army costs to LOGCAP costs)



Source: Congressional Budget Office.

Note: LOGCAP = Logistics Civil Augmentation Program.

CBO used an average of data from 10 selected sites in Iraq to determine the values of two critical cost factors used in the analysis: the percentage of the Army's costs that are recurring beyond the first year of conflict, and the percentage of the contractor's costs that must be added to the estimate of Army costs. However, CBO's results for the base-case scenario would remain essentially the same as long as the value of each cost factor for Task Order 59 as a whole was within the range of the values observed for the 10 sites. (See Appendix C for additional details about CBO's cost analysis. For further discussion of the sensitivity of the results, see Appendix D.)

Incremental Versus Total Costs

CBO's analysis to this point has considered only the incremental costs of replacing the LOGCAP contractor with Army logistics units. A different approach would consider all of the costs of this option including those already funded in the Army's peacetime budget: basic pay and peacetime allowances for active-duty military personnel and the routine costs of peacetime training exercises and regular equipment maintenance for existing Army units (see Appendix E). Those currently funded costs are fixed if the Army's current force structure is assumed not to change. Those costs would vary, however, if options were considered that replaced existing Army units with civilian personnel or contractors, thereby shrinking the Army's force structure below current levels.

Availability of Existing Army Units

As previously noted, Task Order 59 constitutes approximately half of the work being performed under the LOGCAP contract in support of Operation Iraqi Freedom. CBO assumed that the Army would be able to make use of existing Army units to perform some of the work required for Task Order 59. However, if the Army eliminated the LOGCAP contract entirely and relied instead on its own logistics units, only a small percentage of the required Army units would be available in the existing force structure to meet that broader tasking. For example, CBO estimates that about 60 percent (104 of 177) of the units needed to provide logistics services comparable to those outlined in Task Order 59 are available within the Army's existing force structure (see Table 3-3 on page 34). However, deploying those units would exhaust most of the pool of available units, leaving fewer than 10 percent (81 of 875) of the units needed to fill the rotation base.

If the Army attempted to provide the logistics services required under Task Order 59 while simultaneously providing services to replace the other task orders that constitute the remaining half of the LOGCAP contract, only a few existing units would be available in the current force structure. If the type and amount of services required by those other task orders were identical to the services required by Task Order 59, only 10 percent of the units needed to support the mission and only 5 percent of the units required to fill the rotation base would be available in the current force. The requirements of those other task orders undoubtedly differ from Task Order 59, however, so the actual availability of units could be different from this estimate.

Because the Army would have to acquire more equipment and personnel for the new units, and because the recurring costs for routine peacetime operations conducted by those new units would also have to be considered, costs would increase as new units accounted for a larger percentage of those required to provide logistics services. Thus, doubling the scope of the logistics services provided by Army units—to replace the entire LOGCAP contract, not just the functions of Task Order 59—would more than double the Army's costs.

Table 3-7.

Comparison of Incremental Costs Over 20 Years for Providing Logistics Support Using Only New Army Units

(Billions of 2005 dollars)

	Onetime[a] and Periodic Contingency Costs[b]	Recurring Contingency Costs[c]	Recurring Routine Costs[d]	20-Year Total
Logistics Support Provided by Army Units				
Costs to perform mission				
Mix of existing and new units	3.2	33.6	5.9	42.7
All new units	3.9	33.6	12.8	50.3
Difference	0.7	0	6.9	7.6
Costs to provide rotation base				
Mix of existing and new units	5.0	n.a.	30.7	35.7
All new units	5.6	n.a.	36.7	42.3
Difference	0.6	n.a.	6.0	6.6
Total Difference	**1.3**	**0**	**12.9**	**14.2**

Source: Congressional Budget Office.

Note: n.a. = not applicable.

a. Onetime costs include the hiring and training of personnel and the acquisition of equipment for additional Army units. Those costs would be incurred only in the first year, when the Army decided to provide logistics services in-house.

b. Periodic contingency costs occur in the first year of each contingency operation and include the costs to procure equipment and construct facilities needed specifically for that operation.

c. Recurring contingency costs for two five-year contingency periods.

d. Costs for 20 years of routine operations. For existing units, those costs would be included in the Army's peacetime budget and would not be incremental to bringing the logistics functions in-house. For new units, half of those costs would be incurred during contingency operations.

CBO estimated an upper bound on the Army's costs of replacing Task Order 59 if the Army simultaneously replaced all of the remaining task orders in the LOGCAP contract. To establish that bound, CBO estimated the cost of performing the work in Task Order 59 using only new units and compared that estimate with the costs displayed in previous tables assuming a mix of existing and new units (see Table 3-7). Using only new units would increase onetime and periodic costs by $1.3 billion to establish, man, and equip the new units and would increase recurring routine costs by another $12.9 billion because personnel and operations costs for those units are not included in the Army's peacetime budget. Thus, obtaining logistics support using only new Army units would cost $14.2 billion more than obtaining those services using the mix of existing and new units assumed in the earlier analysis—and $51.2 billion more than obtaining that support from the LOGCAP contractor.

Implications for Contractor-Provided Logistics Support

Given that having the Army provide its own logistics support would cost more than continuing to use the LOGCAP contractor, would it be cost-effective to reduce the Army's current combat-service-support footprint and rely even more heavily on contracted logistics support? The Army's logistics units exist primarily to provide support to U.S. soldiers during combat, but they can also provide support during an occupation (such as in Iraq), a peacekeeping operation (such as in Bosnia), or humanitarian efforts (such as hurricane recovery). Army units, particularly from the active component, can be available on very short notice to respond to emergencies. All of those circumstances would need to be considered as part of any analysis exploring whether Army logistics units should be reduced if the use of contractors was expanded.

CBO has not performed the analysis necessary to address the question posed above but can make several observations. As of May 2005, according to CBO's estimates, the Army had deployed about 67,000 logistics personnel to Southwest Asia (including Afghanistan and several adjoining countries, as well as Iraq and Kuwait. See Table 1-2 on page 5). Some positions filled by those soldiers and their predecessors may be considered military-essential, in part because the danger to contractors at certain times and in certain locations, both during major combat operations and during the subsequent occupation, would have been too great. In addition, uniformed logistics units integrate with combat units in the same theater-wide chain of command and operate under the same provisions of both U.S. and international law. The same cannot be said for contractors.

As discussed in Chapter 1, CBO's analysis indicates that the Army's expanded use of private contractors over the past 10 to 15 years has augmented the Army's organic logistics capability, not replaced it. Concurrent with the presence of Army logistics personnel, Kellogg, Brown & Root has maintained a large presence in the Iraqi theater throughout the period of U.S. involvement there, starting in Kuwait both before and during major combat operations in Iraq and expanding into Iraq proper during the postcombat occupation. KBR has also informed CBO that the successor to Task Order 59—known as Task Order 89—will have a wider scope (including more functions and probably a higher annual dollar value) than did Task Order 59.

Certain benefits could arise from the expanded use of LOGCAP irrespective of its potential to permit reductions in the Army's combat-service-support units. For example, the Army is currently experiencing recruiting difficulties, particularly in the National Guard and Reserve, in which two-thirds of logistics personnel are concentrated (see Table 1-4 on page 17).[11] One factor underlying those difficulties is the high frequency of deployment, which has prevented the Army from achieving its goals of mobilizing, at most, 17 percent of reserve-component units and deploying, at most, 33 percent of active-component units at any time. Expanding the use of contractor support while maintaining the Army's current logistics force structure would reduce the frequency with which logistics units needed to be deployed, possibly mitigating the Army's recruiting problems.

Option 2: Rely More on Federal Civilians for Logistics Support

Some policymakers have asked whether the military could hire federal civilians to provide logistics support to deployed forces, as an alternative to either procuring that support from private contractors or providing it using Army units. Instituting such an option would most likely require significant changes to civil service policies and practices, as discussed below. Because the ramifications of such changes are unknown, and their details are difficult to define, CBO presents a qualitative discussion rather than a detailed cost analysis of the option.

Background on Federal Civilians

Civilians deploying with the armed forces often provide uniquely governmental functions. For example, they may develop policy, oversee government contracts, or manage government assets or resources. Or they may serve in occupations that exist in the private sector (such as secretaries, teachers, or lawyers) but in particular billets that the Department of Defense stipulates must be held by employees of the federal government. The Army may perceive a need for such workers to operate as equal members of a military staff, and some military leaders may be more comfortable working with federal civilians who (like military personnel) have sworn to uphold and defend the U.S. Constitution. Civilians who maintain weapon systems or platforms in U.S. government facilities (such as maintenance depots) may deploy to provide similar support overseas.

The Department of Defense designates certain civilian employees "emergency-essential" to ensure that they are available during contingency operations or national emergencies. The designation applies to civilians who occupy positions overseas or who would be transferred over-

11. Through June 2005, the Army National Guard had missed its monthly recruiting goals for nine consecutive months, was running 10,000 soldiers below its cumulative recruiting goal for fiscal year 2005, and was 19,000 below its authorized manning level. The Army National Guard also missed its annual recruiting goals for fiscal years 2003 and 2004. Through June 2005, the active Army was running about 7,000 soldiers below its cumulative recruiting goal for fiscal year 2005. See John J. Lumpkin, "Army Guard Misses Recruiting Goal Again," Associated Press, July 12, 2005; and Lawrence Kapp, *Recruiting and Retention: An Overview of FY2004 and FY2005 Results for Active and Reserve Component Enlisted Personnel*, CRS Report for Congress RL32965 (Congressional Research Service, updated June 30, 2005), pp. 10-11, available at www.fas.org/sgp/crs/natsec/RL32965.pdf.

seas during a crisis. Such positions cannot be converted to military billets because they "require uninterrupted performance to provide immediate and continuing support for combat operations or support maintenance and repair of combat essential systems."[12] Positions that had not been previously designated emergency-essential may be designated as such as a result of unforeseen circumstances or the exigencies of a particular crisis. Any emergency-essential employee who refuses to deploy or to remain behind after a noncombatant evacuation operation is subject to disciplinary action, including removal from federal service.[13]

Other positions—those that "cannot be vacated during war or national emergency without seriously impairing the mission"—are designated "key employee" positions. Such employees are considered to have "unique or scarce managerial or technical skills required by the wartime mission."[14]

All federal civilians who deploy must meet certain medical, dental, and psychological qualifications. When appropriate, the government may provide predeployment training in topics ranging from standards of conduct and customs of the host country to antiterrorism, force protection, first aid, and small arms. As with military personnel, federal civilians who are about to deploy receive wills and powers of attorney at government expense. Civilians can also receive base exchange and commissary privileges, as well as medical care in-theater.

Federal civilians who deploy overseas are subject to the Uniform Code of Military Justice if the Congress has declared war; they may be subject to the UCMJ during an undeclared war if they are retired military personnel. The military commander may issue government firearms to deployed civilians. However, those civilians would lose their noncombatant status if they used their weapons for any purpose other than self-defense. Even in cases of self-defense, they might lose their noncombatant status in the eyes of enemy forces.

Deployment of Federal Civilians in Recent Operations

Federal civilians have been instrumental in supporting recent contingency operations in Afghanistan and Iraq. DoD collects monthly data on the total number of nonmilitary personnel in the U.S. Central Command's (CENTCOM's) area of responsibility, which includes operations in both Iraq and Afghanistan as well as U.S. troops stationed in adjoining countries such as Kuwait and Uzbekistan.[15] The number of federal civilians (including personnel from DoD and other federal agencies, supporting military operations as well as reconstruction) averaged about 3,100 in calendar year 2003 and 3,500 in calendar year 2004 (see Figure 3-6).[16] The number of contractors averaged about 8,000 in calendar year 2003 and 18,000 in calendar year 2004 (those numbers include only U.S. nationals working overseas, not host-country or third-country nationals).

In early 2003, in the midst of major combat operations in Iraq (which ended on April 30 of that year), a large share of contractors were deployed to Iraq and Afghanistan relative to federal civilians. Over the course of 2003, however, the contractor share dropped as civilians entered Iraq to assist the State Department and other U.S. agencies with reconstruction. Federal civilians continued to be a presence during the first six months of 2004, until the Coalition Provisional Authority was disestablished and sovereignty was returned to the Iraqis on June 28, 2004. After that time, the number of federal civilians fell slightly, and the number of contractors rose substantially.

Between March 2003 and December 2004, Army civilians accounted for an average of 60 percent of all DoD civilians deployed to CENTCOM's area of responsibility.

12. Headquarters, Department of the Army, *DA Civilian Employee Deployment Guide*, Pamphlet 690-47 (November 1, 1995), p. 1.

13. Department of Defense Directive 1404.10, "Emergency-Essential (E-E) DoD U.S. Citizen Civilian Employees Overseas" (April 10, 1992).

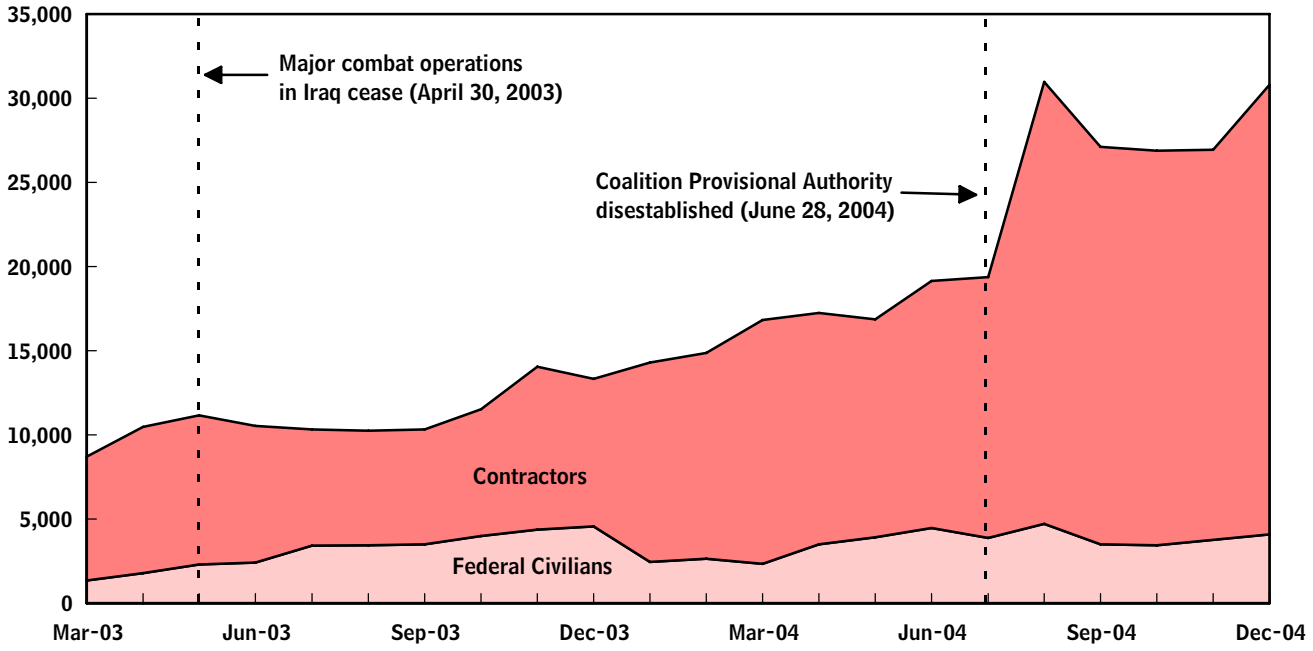
14. Department of Defense Directive 1400.31, "DoD Civilian Work Force Contingency and Emergency Planning and Execution" (April 28, 1995); Department of Defense Instruction 1400.32, "DoD Civilian Work Force Contingency and Emergency Planning Guidelines and Procedures" (April 24, 1995). Sometimes a conflict can occur if a "key employee" also belongs to a Guard or Reserve unit that is activated.

15. CENTCOM's area of responsibility comprises 27 countries, distributed among four contiguous regions: the Horn of Africa; South Asia (Afghanistan, Iran, and Pakistan); the Arabian Peninsula, Iraq, and northern Red Sea area; and Central Asia (including Uzbekistan and four other former Soviet republics). See www.centcom.mil/images/27_AOR_Map.jpg.

16. The data are monthly snapshots compiled by the Joint Staff. Other government sources have compiled estimates that may differ.

Figure 3-6.

Number of U.S. Contractors and Federal Civilians in the U.S. Central Command's Area of Responsibility



Source: Congressional Budget Office based on data from the Department of Defense.

The Department of the Army provided CBO with detailed occupational and pay-grade data for its 1,750 civilian personnel who were deployed to Iraq or Kuwait during November 2004. Figures 3-7 and 3-8 show the 10 largest "professional and technical" and "trade, craft and labor" occupations, respectively.[17] Eighty percent of the Army civilians deployed to Iraq or Kuwait at that time could be classified as "professional or technical." Those occupations include equipment specialists, civil engineers, logistics management specialists, and miscellaneous administration and program management specialists. All of those occupations involve managing projects or overseeing contractors rather than performing functions themselves. Equipment specialists, for example, are expected to:

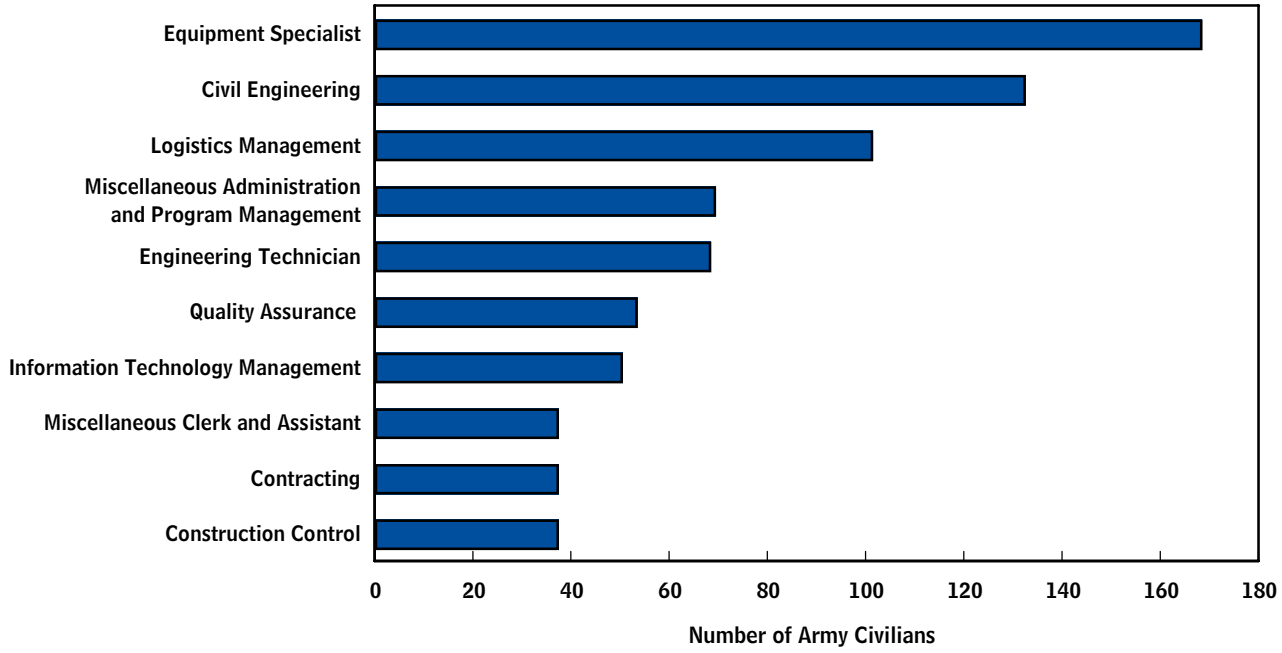
- Determine or recommend the requirements for the appropriate spare parts, tools, and operating instructions to support equipment during tests;
- Maintain liaison with agencies and contractors developing the equipment for the purpose of effecting solutions to problems;
- Review layouts, engineering and production drawings, specifications, and test reports; and
- Compare equipment offered by contractors to specifications contained in bid invitations.[18]

17. Federal government jobs are generally divided into two classification systems. Traditionally, the General Schedule is applied to professional and technical jobs, and the Federal Wage System is applied to trade, craft, and labor jobs. The occupational mix in November 2004 may not be representative of earlier periods during Operation Iraqi Freedom. Major combat operations ended on April 30, 2003, and by November 2004 (some 18 months later), federal civilians were active in the ongoing reconstruction phase.

18. Position description for the Equipment Services job series, General Schedule 1670, from the Office of Personnel Management's Web site, available at www.opm.gov/fedclass/1600/1600_10.asp.

Figure 3-7.

Top 10 "Professional and Technical" Occupations of Army Civilians Deployed to Iraq or Kuwait, November 2004



Source: Congressional Budget Office based on data from the Department of the Army.

Note: Data include predominantly professional and technical employees paid on the General Schedule. Data also include one member of the Senior Executive Service and a small number of employees paid with nonappropriated funds or from special pay plans.

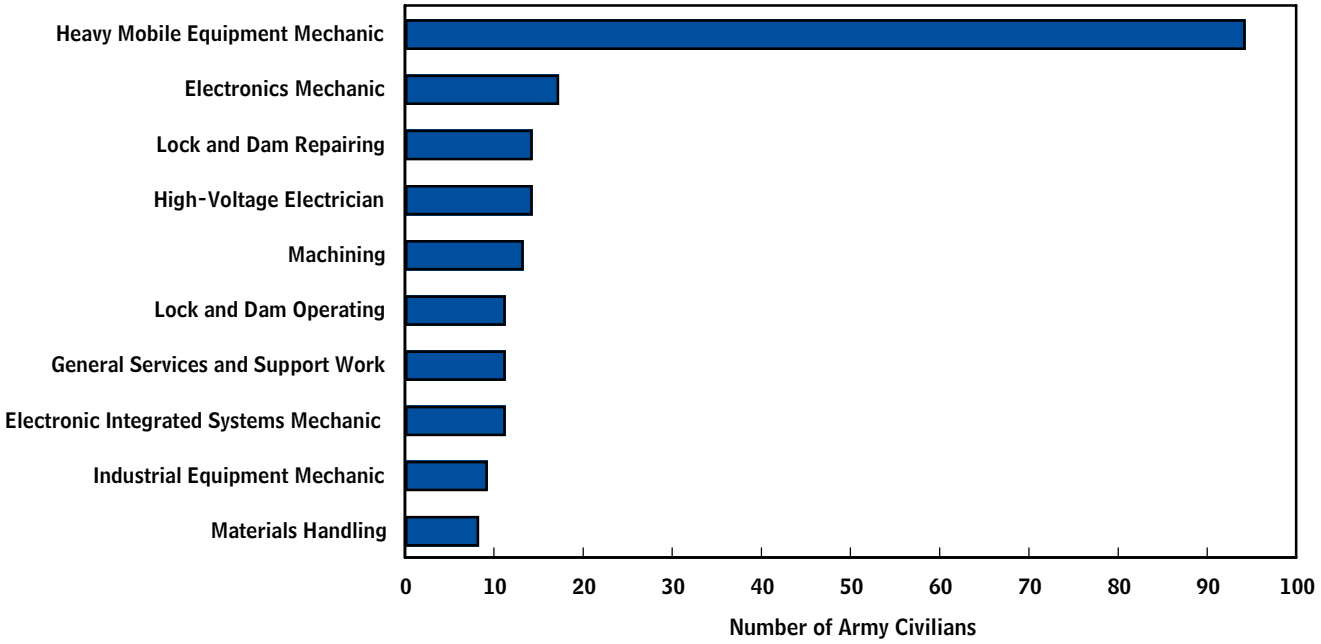
In addition to those shown in Figure 3-7, other professional and technical occupations represented in Iraq and Kuwait included auditing, intelligence, program and budgetary analysis, and safety and occupational health.

The remaining 20 percent of Army civilians deployed to Iraq or Kuwait in November 2004 worked in the trade, craft, and labor (or wage-grade) specialties. By far the largest single wage-grade occupation represented was that of heavy mobile equipment mechanic (see Figure 3-8). Those mechanics overhaul and repair heavy-duty vehicles such as bulldozers, cranes, fire trucks, locomotives, and road graders. Although that was the largest wage-grade occupation, the presence of heavy mobile equipment mechanics overseas was nonetheless small: they accounted for only 94 of the 1,750 deployed civilians recorded in the Army's data. Additional occupations not shown in Figure 3-8 (because of small numbers) included ammunition, explosives, and toxic-materials specialists; crane operators; forklift operators; and food-service personnel. Those trades are also found in the private sector, of course, but those federal civilians may be used in special situations, such as when the work must be performed in particularly dangerous areas or when there might be a danger of sabotage if host-country or third-country nationals were used instead of U.S. civilians.

The Army data also provided information about the employing organizations. About 20 percent of the Army civilians worked for the U.S. Army Engineering District (Gulf Region), which consists of three district offices in Iraq and is responsible for management and quality control of Iraq reconstruction and new-construction efforts. The district did not exist during major combat operations, and its mission does not include combat support or combat service support to Army combat units. Generally, positions are filled with personnel from other engineering districts or from other parts of the Army or federal civilian workforce, who volunteer to serve a six-month to one-year term (which may be extended). Most of the actual construction is contracted out to local Iraqi contractors.

Figure 3-8.

Top 10 "Trade, Craft, and Labor" Occupations of Army Civilians Deployed to Iraq or Kuwait, November 2004



Source: Congressional Budget Office based on data from the Department of the Army.

Note: Data include predominantly trade, craft, and labor employees paid under the Federal Wage System but also include a small number of employees paid with nonappropriated funds.

Other Army organizations sent civilian personnel to support combat operations. The Army Tank, Automotive, and Armaments Command, for example, sent more than 250 civilian personnel from its headquarters and from its facilities in Anniston (Alabama), Red River (Texas), and Rock Island (Illinois). The Army Communications and Electronics Command sent another 120 personnel, including some from the Tobyhanna (Pennsylvania) depot. This command sustains and supports command, control, communications, computers, intelligence, sensors, and reconnaissance (C4ISR) equipment. Other Army organizations that deployed federal workers include the Aviation and Missile Command, the Army Field Support Command (which manages the LOGCAP contract as well as the Army's prepositioned stocks of supplies), and various ammunition, logistics, and traffic-management centers.

Federal Civilian Compensation During Deployment

Federal civilians who deploy receive foreign-post differential and danger pay, as specified in State Department guidelines. Thus, most federal civilians supporting Operation Iraqi Freedom have received an additional 50 percent premium over their base salary.[19]

Federal civilians may be eligible for overtime pay, compensatory time, shift-differential pay, and Sunday/holiday premium pay. Overtime pay rates, however, are capped, as is total cash compensation. Federal civilians may also earn a per diem if they have temporary-duty status. (For example, civilians deploying to Iraq who are housed on government compounds earn about $10 per day to cover meals. Those living in hotels in Baghdad receive $154 per

19. For additional details on pay premiums, see the Web site of the Department of State's Office of Allowances (www.state.gov/m/a/als).

day toward food and lodging. Those living in Kuwaiti hotels—where hotel rates are significantly higher—receive $344 per day.)[20] The Army does not record how much overtime is earned by federal civilians supporting OIF, but for planning purposes the Army assumes an average 60-hour workweek.

The Federal Employees' Group Life Insurance program fully covers federal civilians who might be killed during hostilities. In addition, federal civilians receive many of the same casualty entitlements and benefits that military personnel receive if they are killed in the theater of operations.

The Internal Revenue Service has different rules for military personnel, contractor personnel, and federal civilians who earn income while stationed in a combat zone. The President designates by executive order a combat zone as an area in which the U.S. military is engaged in combat. For enlisted personnel and warrant officers, active-duty pay earned during any month the individual serves in a combat zone is excluded from federal taxable income. Also excluded are imminent-danger pay and hostile-fire pay, as well as reenlistment bonuses if the voluntary extension or reenlistment occurred during a month in which the individual served in a combat zone. The rules are similar for commissioned military officers, except that the combat zone exclusion is capped at the highest rate of enlisted pay (which is generally lower than most officers' pay) plus any imminent-danger pay and hostile-fire pay that the officer received.[21]

Under some circumstances, the income that contractor personnel earn overseas is also excluded from federal income taxes. A major condition is that "a U.S. citizen or a U.S. resident alien . . . is physically present in a foreign country or countries for at least 330 full days during any period of 12 consecutive months."[22] The tax exclusion is capped at $80,000; it applies to any foreign country, not just those designated as combat zones.

Finally, the tax treatment is different for U.S. government civilian employees stationed abroad. If they served in a combat zone or a qualified hazardous-duty area in support of the U.S. military, they qualify for certain extensions of deadlines for filing tax returns and for paying taxes. Their income earned overseas from federal employment is fully taxable (except for a few miscellaneous allowances that cover expenses such as repairs to leased homes, education of dependents, and motor vehicle shipment).[23]

Analysis of Option 2

Compared with the federal government, private contractors generally have more flexibility in hiring and firing workers. Typically, hiring new civil servants requires numerous steps and often involves both the hiring agency and the Office of Personnel Management. Contractors may also possess broader options when it comes to salary and other compensation. Pay for most federal employees is dictated by the General Schedule. Thus, an employee at GS-11, step 5, earns the same salary regardless of whether he or she is a budget analyst or a geologist. The level and step that a federal employee achieves in the General Schedule are based on seniority, not productivity alone. Federal civilians receive a fixed benefit package, and part-time federal employees receive those benefits as well, albeit at a reduced rate. Contractors may offer limited benefits, but when required, may have greater flexibility in their use of bonuses and other financial incentives.[24]

Command Structure. Federal civilians who work within the military's unit structure—whether in the United States or deployed overseas—report up through the military chain of command in the same manner that military

20. Daily rates were downloaded from the State Department's Web site as of December 2004 (www.state.gov/m/a/als/prdm/). Those daily rates were in effect from the summer of 2003 through December 2004. The nightly government rate for the Kuwait City Marriott on March 30, 2005, was $226 plus a 15 percent service fee. The rate for comparable hotels in Baghdad ranged from $36 to $90 per night.

21. Department of the Treasury, Internal Revenue Service, *Armed Forces' Tax Guide,* Publication 3.

22. Department of the Treasury, Internal Revenue Service, *Tax Guide for U.S. Citizens and Resident Aliens Abroad,* Publication 54.

23. Department of the Treasury, Internal Revenue Service, *U.S. Government Civilian Employees Stationed Abroad,* Publication 516.

24. The new National Security Personnel System is intended to increase DoD's flexibility in hiring, firing, and compensating employees. However, that system has not yet been implemented, and its effectiveness is unknown. Some information may be gleaned from workforce demonstration projects—such as the Navy's at its China Lake, California, research facility—that contain features similar to those proposed for the new system. See Shawn Zeller, "Smashing the System," *Government Executive Magazine* (November 2003), available at www.govexec.com/features/1103/1103s2.htm.

personnel do. However, the notion of a purely civilian unit would raise new challenges. DoD civilians are generally not organized into deployable all-civilian units, in the way that military personnel are organized into platoons, companies, battalions, and so forth. In the analysis of Option 1—which explores the possibility of relying on Army units for a greater share of logistics support—CBO added headquarters elements to coordinate the activities of the discrete Army units that would perform each individual function (for instance, firefighting team, supply company, and so on). The same degree of coordination would be necessary under the all-civilian concept. But although civil service bureaucracies in the United States contain similar management personnel, they are not necessarily qualified to lead an operational unit into the field (particularly during hostilities). DoD would have to recruit and train people for the operational leadership positions.

One exception is that U.S. depots deploy civilian teams called Forward Repair Activities to support the same weapon systems that they repair in the depots. Other occupations, such as auditors, may also operate independently of the military command structure. Yet those teams are small and their missions are highly specialized. Their missions do not correspond to the large-scale logistics support overseen by the LOGCAP contractor, which would require several thousand personnel no matter what the mix of military personnel, contractors, and federal civilians.

Training and Rotation Base. One can envision a spectrum of workforce alternatives, with military personnel at one extreme, contractor personnel at the other, and federal civilians somewhere in the middle. Regarding military personnel, CBO assumes the need for a rotation base enabling soldiers to (roughly speaking) alternate between periods of deployment overseas and periods of both refresher and advanced training in the United States. Those training opportunities help the soldiers advance along their career paths and maintain their readiness for combat. The rotations back to the United States also alleviate the problems of family separation that would ensue under indefinite deployments overseas.

Contractors are better able than the government to recruit trained personnel at all levels of experience from the private-sector labor market. In addition, they do not necessarily guarantee a long-term employment relationship, particularly when staffing for a contingency operation under the LOGCAP contract. Thus, contractors may offer their employees only limited training opportunities. They may also expect their employees to deploy overseas for extended periods of time, either compensating those employees (and doing so with greater flexibility than is available to the Army) or simply accepting a higher turnover rate and replenishing their workforce when necessary.

Federal civilians lie somewhere between those two extremes. The Army's personnel system does not discourage the lateral entry of trained civilians, so the Army would not have to train and develop civilians to the same degree that it does military personnel. Still, the Army might need to expand its training establishment in the United States to provide civilian logistics personnel with advanced and continuing training opportunities. Moreover, if federal civilians were expected to deploy with the same frequency and duration that military personnel do, the Army might need to establish and maintain a civilian rotation base in the United States to avoid retention problems stemming from protracted family separation. (The State Department effectively maintains a civilian rotation base when it rotates foreign service officers between assignments in the United States and those in U.S. consulates and embassies overseas.)

CBO's detailed cost analysis of Option 1 indicates that the Army's need for a rotation base is the main factor pushing its costs above those of the LOGCAP contractor. CBO has not conducted a similar, detailed analysis of the costs of using federal civilians. However, the requirement to maintain a training and rotation base for civilians would tend to make the civilian option more costly than relying on the LOGCAP contractor but less costly than using Army logistics units.

Another Example of Federal Civilians in Operational Roles

The recent shift of airport security screeners from private contractors to federal civilians may provide insights into civilianizing a government function. The Aviation and Transportation Security Act, signed by the President on November 19, 2001, gave the newly created Transportation Security Administration (TSA) one year to create a security screener workforce composed predominantly of federal civilians. The characteristics of the federalized screener workforce include a substantially increased degree of training and a higher level of workforce stabil-

ity, with substantially lower turnover, than had been the case under private contractors.

However, TSA policy circumscribes job tasks: screeners are forbidden to perform other security duties (such as visually inspecting planes or runways). That policy has been problematic at some smaller airports.[25] Similar restrictions on the scope of work could make the use of federal civilians less desirable for rapid deployment overseas in support of contingency operations.

25. Stephen Losey, "Airports Wary of Privatizing Screeners," *Federal Times*, April 18, 2005, p. 10.

CHAPTER

4

Additional Options to Change the Personnel Mix

This chapter considers two additional options that would change the mix of military personnel, contractors, and federal civilians that support deployed forces, albeit on a more limited scale than Options 1 and 2 (which are explained in Chapter 3).

When units are stationed at home in the United States, their weapon systems are maintained by a mix of their own organic maintenance personnel (enlisted technicians assigned to operational units such as aircraft squadrons or artillery battalions), federal civilians and contractor personnel working at government depots, and contractor personnel working at their own commercial facilities. Both civilians and contractor personnel could accompany the military units when they deployed overseas and continue to support their weapon systems. Under Option 3, federal civilians would assume that entire responsibility and replace the contractor's technical representatives who currently deploy in support of weapon systems. (Option 3 is more limited in scope than Option 2, under which federal civilians would replace the considerably larger number of contractor personnel who provide large-scale logistics support under the Logistics Civil Augmentation Program.)

Option 4 would create a new labor category that blended the characteristics of contractor personnel and military reservists. One such idea is being implemented by the British Ministry of Defense (MoD) and is called sponsored reserves. Under that concept as it would be applied in the United States, individuals would work for U.S. defense contractors during peacetime but would also be members of the military reserves and would deploy as activated reservists during wartime. One distinguishing feature of this arrangement is that the reservists would deploy in the same jobs and with the same units in which they had been working during peacetime. Yet the reservists would differ from the Department of Defense's current dual-status civilians (also known as military technicians) because they would work as contractors rather than as federal civilians during peacetime.

Option 3: Substitute Federal Civilians for Deployed Contractors Who Support Weapon Systems

The Army defines system contractor support as the use of commercial sources to provide support for Army materiel, including weapon and supply systems, aircraft, and command-and-control infrastructure.[1] Such support can involve maintenance, the supply and distribution of parts, training, software support, and even more extensive work, such as rebuilding or overhauling components or systems.[2]

System contractor support falls under a broad concept that DoD refers to as integrated logistics support (ILS). The Army defines ILS as "all elements of planning, developing, acquiring, and sustaining Army materiel throughout its life cycle."[3] Military personnel, federal civilians, and contractors can all be involved in aspects of ILS. Some systems rely on contractors for some or all logistics support, a concept known as contractor logistics support (CLS), whereas other systems rely primarily on ILS provided organically by military personnel and federal civilians. Yet another form of support is a public/private partnership, such as a contractor using government facilities

1. Army Field Manual 3-100.21, *Contractors on the Battlefield* (January 2003), p. 1-3.
2. Army Regulation 700-127, *Integrated Logistics Support* (November 1999), p. 28.
3. Ibid., p. 5.

to repair military equipment. Two examples illustrate the range of ILS concepts: For the Stryker medium-weight armored vehicle, contractors currently provide most logistics functions, including maintenance, technical assistance, and the supply and distribution of parts; in contrast, the Abrams tank uses system contractors only for technical support, as required.[4]

Logistics support decisions are made as part of the process of acquiring a system and are taken into consideration along with decisions about technical specifications, the development schedule, procurement quantity and schedule, and so on. In deciding whether to adopt contractor logistics support for a system, the Army weighs a number of factors including cost-effectiveness, the time frame for fielding the system, labor force requirements, and organic and contractor personnel skills.[5] DoD may use CLS on either a temporary basis (known as interim contractor support)—with a goal of transitioning to organic unit-level or government-depot support later—or for the system's entire life cycle.

Studies by the Government Accountability Office (formerly the General Accounting Office), RAND Corporation, and the Army indicate that many major Army systems receive some type of support from system contractors.[6]

The Role of Federal Civilians Deploying to Support Weapon Systems

The roles of federal civilians and of contractors overlap in supporting weapon systems. To learn more about the role of federal civilians in Iraq and Afghanistan, the Congressional Budget Office surveyed representatives from the Army depots at Tobyhanna and Letterkenny (Pennsylvania) and Corpus Christi (Texas).

Representatives from Tobyhanna Army Depot report that they send both individuals and teams to support combat units overseas. Teams are called Forward Repair Activities (FRAs), and they generally support the same systems that they repair in the depot. As of December 2003, Tobyhanna had deployed FRAs to five areas in Iraq, plus one each in Afghanistan, Bosnia, Kosovo, and Kuwait. Most of the employees were electronics technicians who deployed for tours lasting between 30 days and 179 days. Furthermore, most employees who accepted a 179-day rotation were willing to volunteer for a second rotation of equal length.

FRAs are generally considered stationary, with the exception of the FRA-4th Infantry Division and the FRA-Stryker brigade combat team (SBCT) 1, which have personnel embedded in the fighting force—traveling, eating, and sleeping with the unit they are supporting. Even personnel in stationary units, however, can move to other locations or respond to specific calls for technical assistance. Tobyhanna personnel generally stay in combat-support or combat-service-support roles away from the areas of fighting, but they may go to (or near) those areas periodically, if necessary.

Tobyhanna services much of the Army's C4ISR equipment in the United States and overseas, including radios, missile guidance and control systems, landing systems, and radar and air traffic control systems.[7] The depot fabricates installation kits of systems hardware and installs and tests those kits as needed for Army and Marine Corps customers. Depot personnel also test, troubleshoot, and repair those systems, including electronic and mechanical components as well as computer hardware.

Tobyhanna personnel report that they work with contractors, who provide technical support of hardware and software, but that contractors and depot personnel are not part of the same teams. Also, one depot employee served as the contracting officer representative for the Army's modular base-camp construction team, overseeing employees of Kellogg, Brown & Root. Contractors and depot personnel may work on different components of the same system; for example, a private contractor might

4. U.S. Army Combined Arms Support Command, *Systems Contractor Support of 4th Infantry Division (*August 2001), p. A26.

5. Army Regulation 700-127, pp. 28-29.

6. General Accounting Office, *Defense Department Maintenance: DoD Shifting More Workload for New Weapon Systems to the Private Sector*, GAO/NSIAD-98-8 (March 1998); General Accounting Office, *Defense Logistics: Opportunities to Improve the Army's and the Navy's Decision-Making Process for Weapon Systems Support*, GAO-02-306 (February 2002); Frank Camm and Victoria A. Greenfield, *How Should the Army Use Contractors on the Battlefield? Assessing Comparative Risk in Sourcing Decisions,* MG-296 (Santa Monica, Calif.: RAND Corporation, 2005); and U.S. Army Combined Arms Support Command, *Systems Contractor Support of 4th Infantry Division*.

7. C4ISR equipment is for command, control, communications, computers, intelligence, sensors, and reconnaissance.

maintain an aircraft, while depot personnel would provide and maintain the communications gear on that aircraft.

Responses from representatives of Letterkenny Army Depot and Corpus Christi Army Depot were generally consistent with those of representatives from Tobyhanna Army Depot. Letterkenny Army Depot tests and repairs the Patriot missile and its supporting systems. During 2003, small numbers of Letterkenny civilian employees traveled to Kuwait, Iraq, and Saudi Arabia to perform such functions as testing circuit cards used in the Patriot system. One team was sent to rebuild part of the Avenger fire-control system.[8]

Corpus Christi Army Depot repairs and maintains helicopters for all of the military services. As part of that mission, the depot sends personnel overseas as needed to perform one of two main functions. One group performs hands-on mechanical work on engines, operating the Flexible Engine Diagnostic System. That team is led by one Army civilian with two contractors. A second group—the Analytical Investigation Division—investigates helicopter crashes. An investigator from Corpus Christi generally will travel alone and stay less than two weeks. The investigator is mobile and may go near the crash site until the crashed aircraft is recovered and brought to a military installation. Depot personnel perform the investigation, but contractors may be engaged to move the aircraft from the crash site.

On the basis of that information, it appears that federal civilians provide testing or repair work that is consistent with their work in government depots in the United States—that is, supporting systems that are maintained in those depots. The systems that rely more on contractor support at home, or those whose repairs and other logistics functions have not yet transitioned to government personnel, may require that contractors deploy. Thus, the maintenance philosophy of the system (whether it is routinely maintained by contractors or by civilian personnel) determines whether contractors or federal civilians deploy with the forces. Even systems that are maintained by contractors, however, receive oversight from government officials, who are often civilians.

Deployment of System Contractors in Recent Operations

System support contracts are typically prearranged outside of the wartime theater. For the Army, those contracts are usually awarded by the program manager (PM) or program executive officer (PEO) or by the Army Materiel Command.[9] Some system support contracts contain specific language pertaining to contractor deployment. In other instances, deployed CLS personnel may be funded through modification of an existing contract to support the system within the United States or through an entirely new contract.

The PEO or PM who oversees a particular system may track the number of contractor personnel who deploy, but until recently there has been little or no centralized tracking of contractors.[10] Two of the larger program executive offices, Ground Combat Systems (GCS) and Command, Control, and Communications—Tactical (C3T), took responsibility for tracking all PEOs' deployed system contractors in Operation Iraqi Freedom (see Figure 4-1). Following the initial buildup of forces early in calendar year 2003, the number of system contractors remained between roughly 350 and 500 through June 2004. The November 2003 arrival of the Army's first deployed SBCT in Iraq resulted in a sudden boost in the number of deployed contractors. (SBCTs, under their current interim contractor support arrangement, require relatively large numbers of contractors in-theater.)

CBO estimates that between January 2003 and May 2004, the number of active-duty Army personnel per system contractor has hovered between about 300 and 400 (see Figure 4-2). However, the quantity and location of contractors in-theater is fluid, with individuals constantly arriving, departing, and relocating. The PEOs who pro-

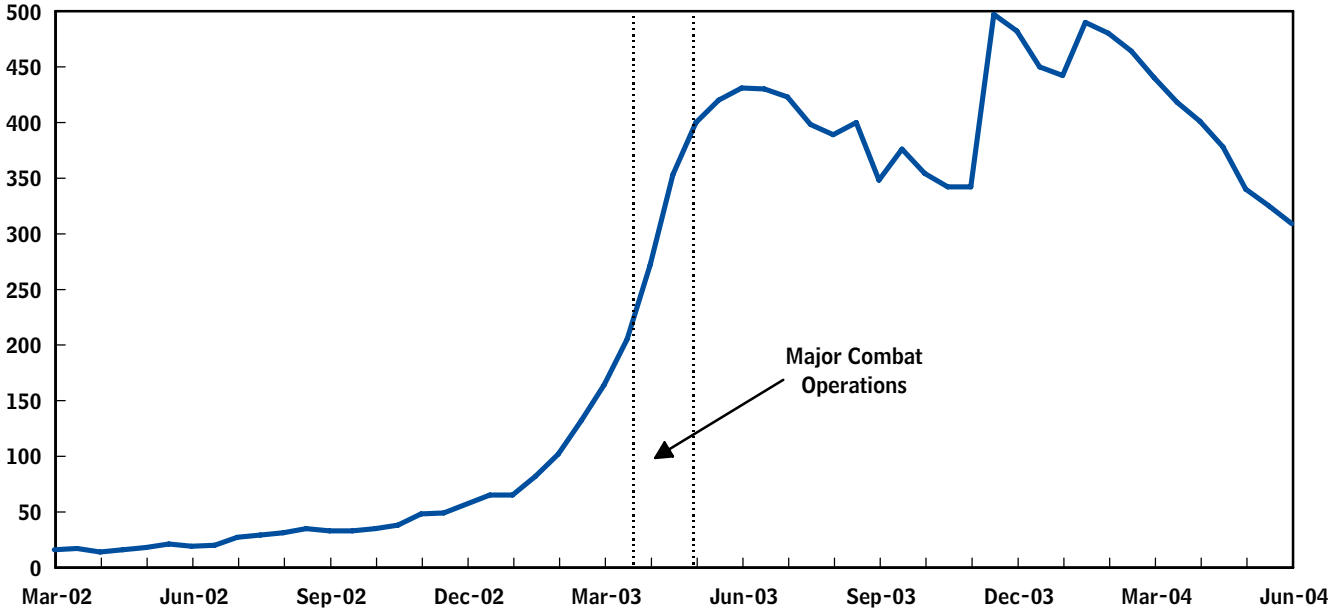
8. Avenger is a lightweight, mobile, transportable air-defense system equipped with Stinger surface-to-air missiles, mounted on a high mobility multipurpose wheeled vehicle. See the description of Avenger at the Federation of American Scientists' Military Analysis Network Web site (www.fas.org/man/dod-101/sys/land/avenger.htm).

9. A PEO manages a portfolio of related programs, and the PMs for those programs report directly to the PEO. Two examples in the Army are the PEO for Aviation, Tactical Missiles, and Air and Missile Defense and the PEO for Simulation, Training, and Instrumentation.

10. The Code of Federal Regulations recently incorporated rules that require the contractor to ". . . establish and maintain with the designated Government official a current list of all contractor personnel that deploy with or otherwise provide support in the theater of operations" (48 C.F.R. 252.225).

Figure 4-1.

Number of Army System Contractors Deployed to Operation Iraqi Freedom



Source: Congressional Budget Office based on data from Department of the Army, Program Executive Offices for Ground Combat Systems and for Command, Control, and Communications—Tactical.

Note: The sudden rise in the number of deployed contractors in November 2003 resulted from the arrival of the Army's first deployed Stryker brigade combat team in Iraq. (Those units require relatively large numbers of contractor maintenance personnel.)

vided those data estimated that at least 80 percent, but not all, of the system contractor personnel were tracked. Therefore, the numbers of system contractors in Figure 4-1 may be undercounts, and the ratios of soldiers to system contractors in Figure 4-2 may correspondingly be overcounts.

Ideally, deployed system contractors would remain behind the front lines during a conflict, and the equipment would be transported back to them for repair or maintenance. Army regulations state that contractors should be assigned duties at echelons above division, which historically has implied operating in the rear areas.[11] However, compliance with that regulation is incomplete. Contractors are permitted to operate in forward locations on a temporary basis, and some system contractors can be embedded in the fighting force. Furthermore, the current operations in Iraq do not clearly delineate between forward and rear areas. Consequently, system contractors could be exposed to combat. Based on data from the PEOs, between about 40 percent and 45 percent of system contractors deployed to OIF in the spring of 2004 were operating in Iraq, with the remaining portion in Kuwait. Some locations within Iraq are more dangerous than others, but the PEOs did not provide more detailed data by location.

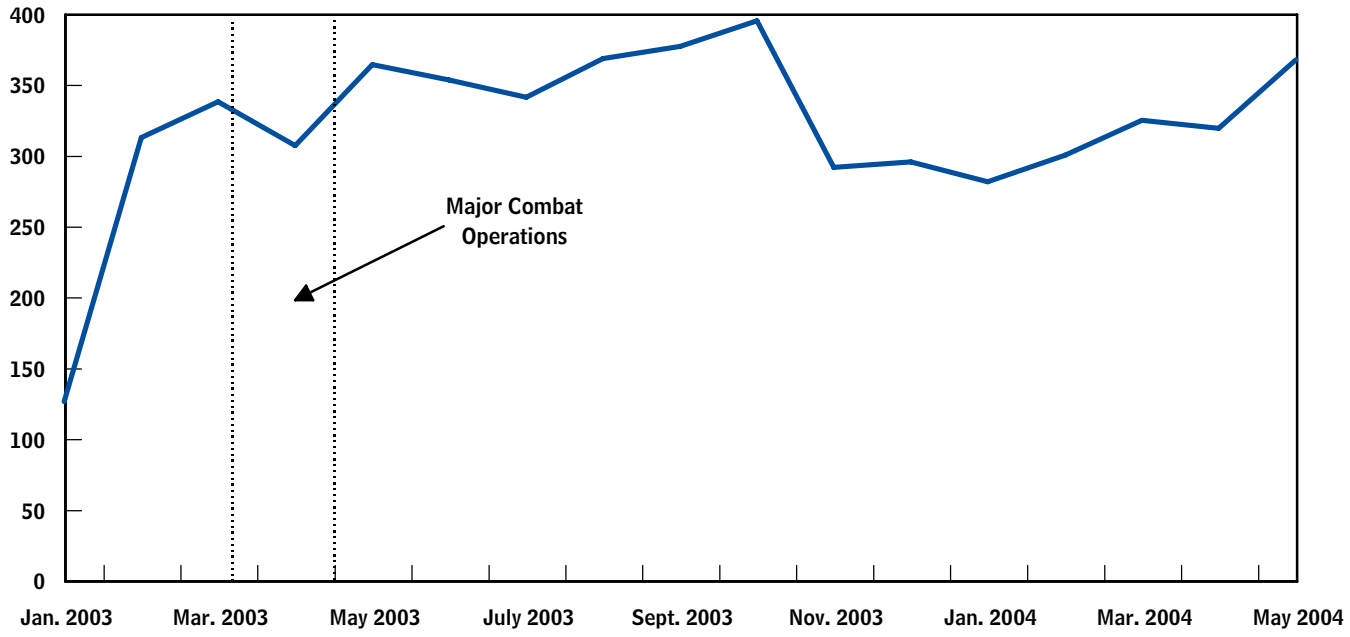
Analysis of Option 3

PEOs cite a number of reasons for using contractors rather than military or federal civilian personnel, including skill requirements, personnel limitations, cost savings, and policy guidance. Among the PEOs that CBO queried (including PEOs of mature and developing systems as well as systems for which the PEOs reported having large numbers of contractors in support of OIF), most cited contractor skill as their justification for using contractor logistics support (see Table 4-1). The increasing complexity of today's military systems amplifies the need for technically skilled support personnel. Most system contractors have had military experience and may have supported the same or a similar system while serving on active duty. Because of their familiarity with a system, those contractors can provide engineering and mainte-

11. Army Regulation 715-9, *Contractors Accompanying the Force* (October 1999), p. 14.

Figure 4-2.

Number of Soldiers per Army System Contractor Deployed to Operation Iraqi Freedom



Source: Congressional Budget Office based on data from Department of the Army, Program Executive Offices for Ground Combat Systems and for Command, Control, and Communications—Tactical.

Note: Each data point represents the average value for the month indicated.

nance solutions that are beyond routine, potentially preventing the need to return an item to the depot for repair.

Several factors can hinder the Army's ability to maintain its own systems with uniformed military personnel. In some cases, the Army may be unable to retain adequate numbers of personnel when competing against more-lucrative civilian employment opportunities. In other instances, a system may be fielded in such small numbers (so-called low-density systems) that training military personnel is not cost-effective. If a system is in an early or "spiral" stage of development, the Army simply may not have had time to develop its own support capability.[12] Systems may also be covered under a manufacturer's warranty that requires specified personnel to perform maintenance and repair, potentially preventing the Army from supporting the systems itself.

Legal and Command-and-Control Issues. System contractors working on the battlefield, akin to other types of contractors, present legal and command-and-control issues. Language in recently updated federal regulations is intended to reinforce the status of U.S. contractors as noncombatants, thereby covered by the Geneva Conventions.[13] As noted in Chapter 1, however, enemy forces may not recognize the noncombatant status of U.S. contractors who maintain or repair weapon systems, instead viewing them as "taking an active part in hostilities." And despite the proscription against causing harm to enemy armed forces, contractor personnel may carry weapons in

12. A DoD memorandum defines spiral development as "An iterative process for developing a defined set of capabilities within one increment. This process provides the opportunity for interaction between the user, tester, and developer. In this process, the requirements are defined through experimentation and risk management, there is continuous feedback, and the user is provided the best possible capability within the increment." See Memorandum from the Under Secretary of Defense (Acquisition, Technology, and Logistics) to the Secretaries of the Military Departments and others, "Evolutionary Acquisition and Spiral Development" (April 2002).

13. The regulations state that "Contractor personnel are not combatants and shall not undertake any role that would jeopardize their status. Contractor personnel shall not use force or otherwise directly participate in acts likely to cause actual harm to enemy armed forces." (See 48 C.F.R. 252.225.)

Table 4-1.

Reported Reasons for Relying on System Contractors in Southwest Asia

System	Number of Contractors in Southwest Asia as of January and February 2004[a]	Percentage of Contractors with Military Experience[b]	Need for Contractors as Identified by Program Offices[c]
Abrams Tank	15	97	Contractors have expertise required on this complex system.
Stryker Vehicle	67	95	Brigade Support Battalion does not have adequate resources to perform all maintenance tasks.
Apache Helicopter	8	95	Contractors possess a higher level of technical knowledge and expertise; they also provide continuity and access to proprietary data and test equipment.
Fox Nuclear, Biological, and Chemical Reconnaissance System	10	71	System is fielded in small numbers, and it is complex.
Defense Communications and Army Transmission System	51	63	Civilians and contractors have traditionally supported the system in the United States; not enough military personnel are available.
Patriot Missile System[d]	25	84	Contractors perform troubleshooting and depot-level repair, which are essential in maintaining operational readiness.
Army Battle Command System	n.a.	"Vast majority"	Contractors are used only when the problem is beyond the capability of active-duty personnel.

Source: Congressional Budget Office based on information provided by Department of the Army.

Note: n.a. = not available.

a. The Southwest Asia theater includes Iraq, Kuwait, and Afghanistan.

b. Percentage measured cumulatively for all contractors deployed through January and February 2004, including those no longer in-theater.

c. Information is from January and February 2004.

d. Data are from calendar year 2003 (Patriot systems are no longer in-theater).

some instances, further clouding their status as noncombatants.

Whether or not they carry their own weapons, contractor personnel may be entitled to protection provided by the Army units that they are supporting.[14] The program offices that CBO contacted generally agreed that system contractors needed some level of military protection, but they could not estimate how many soldiers had been assigned or what the funding had been for that purpose.

Although contractor personnel are not in the military chain of command, contractors "shall comply with orders, directives, and instructions issued by the Combatant Commander relating to force protection, security, health, safety, or relations and interactions with local nationals." The military commander cannot directly control individ-

14. Ibid. According to the regulations, "The Combatant Commander will develop a security plan to provide protection, through military means, of Contractor personnel engaged in the theater of operations unless the terms of this contract place the responsibility with another party."

ual contractor employees, but the government contracting officer (at the behest of the military commander) can order any particular employee to be removed from the theater.[15]

Contractors who deploy overseas are subject to the Uniform Code of Military Justice if the Congress has declared war, and they may be subject to the UCMJ during an undeclared war if they are retired military personnel. Any contractor committing a felony outside of sovereign U.S. territory can be tried under the Military Extraterritorial Jurisdiction Act, but the law has seldom been invoked and has limited effect. Finally, contractors committing grave breaches of the Geneva Conventions can be tried under the War Crimes Act of 1996.

Relative Costs to the Government of Using System Contractors. CBO collected some data on the costs of deployed system contractors but did not conduct a detailed cost comparison for this option. PMs and PEOs often purchase system contractor support at a negotiated hourly rate. CBO estimated the hourly cost for the government to purchase the services of a notional contractor's technical representative, including the elements of base salary and wages, benefits, pay premiums, overhead, and insurance. CBO did not make a comparable estimate for federal civilians, in part because the rates that contractors bill the government include components—such as depreciated capital, building lease payments, managerial overhead, and some insurance—that are not readily measured for federal workers.

The costs of using system contractors can vary widely depending on the expertise required, the system supported, the contractor's responsibilities and cost structure, and other factors. According to data provided by PMs and the Defense Contract Audit Agency, the hourly rate (including benefits and overhead but excluding pay premiums and insurance associated with deployment) for a notional system contractor appears to range from $60 to $125. Of that amount, the base salaries and wages of system contractors range from $30 to $45 per hour, CBO estimates; the remaining portion of the hourly rate pays for benefits, overhead, and other administrative expenses.

Most of the federal civilians with similar skills who have deployed during Operation Iraqi Freedom have been in grades GS-11 through GS-13. The base salary of the lowest-step GS-11 in 2004 was $21 per hour, and the highest-step GS-13 earned $39 per hour. Although the base salaries of contractors' technical representatives and federal civilians with equivalent skills are similar, a comprehensive analysis of the relative cost of the two labor types to the government would require an estimate of federal civilians' fully burdened pay rates, including such elements as benefits, pay premiums, overhead, and insurance. Benefits and pay premiums could be estimated, but information is lacking on overhead costs (such as computers, office space, or a portion of supervisors' salaries) associated with individual federal workers. And the federal government self-insures against workers' compensation claims, meaning that funds would be made available to settle those claims when necessary but there is no fixed allocation of funds per federal worker.

The overseas deployment of system contractors introduces several additional cost elements that are not incurred in the United States and are not included in the range of costs indicated above. Contractor personnel working overseas—particularly those in dangerous locales—often receive pay premiums that augment their base salary. Those pay premiums usually approximate the foreign-post differential and danger-pay allowance set by the State Department for federal civilians working outside the United States but may also include additional negotiated pay increases. The Defense Base Act (DBA) requires that DoD contractors purchase workers' compensation insurance for employees working overseas. (Other insurance costs are assumed to be included in overhead.) Traditionally, firms purchase their own DBA insurance coverage on the competitive market for each DoD contract. Current DBA insurance premiums in Iraq are about 10 percent to 20 percent of base salary.[16] CBO estimates that combining pay premiums with DBA insurance for contractors deployed to Iraq or Kuwait results in a 40 percent to 100 percent surcharge to the base salary rate.

Accounting for premiums and insurance, CBO estimates the fully burdened contractor rate in Iraq or Kuwait at between about $70 and $170 per hour. That estimate

15. Ibid. According to the regulations, "The Contracting Officer may direct the Contractor, at its own expense, to remove and replace any contractor personnel who jeopardize or interfere with mission accomplishment or who fail to comply with or violate any applicable requirements [of DoD contracting regulations]."

16. Government Accountability Office, *Defense Base Act Insurance: Review Needed of Cost and Implementation Issues*, GAO-05-280R (April 2005), p. 4.

does not include predeployment activities, transportation, force protection, or other miscellaneous costs. Although difficult to estimate, those costs are not unique to contractors. Such miscellaneous costs would be common among system contractors and other sources of labor, such as federal civilians.

Costs incurred during deployment may not be the dominant factor in evaluating this option. Most system maintenance occurs in the United States, not during overseas deployments. Thus, the life-cycle maintenance costs are largely determined by peacetime considerations. The decision of who maintains weapon systems during conflicts depends on who has been maintaining them during peacetime. That decision is generally determined by the Army's broader acquisition strategy—including such factors as the time frame for fielding the system and the relative availability of skills—rather than by the relative cost of sending a limited number of people overseas to support deployed forces.

Option 4: Establish a New Type of Personnel—Sponsored Reserves

This option would create a new military employment category known as sponsored reserves. These individuals would work for U.S. defense contractors during peacetime but would also be members of the military reserves and would deploy as activated reservists during contingency operations. The concept stems from a similar approach already in use in Great Britain.

The British Experience

In 1996, the British Parliament authorized the Ministry of Defense to institute a new form of reserve duty called sponsored reserves. The concept of sponsored reserves was established in British law as part of the Reserve Forces Act of 1996, which sought to increase the roles and missions of all reservists. The system allows contractor personnel performing peacetime operations to become activated reservists when they deploy overseas. The system is similar to the U.S. concept of dual-status civilians (also called military technicians) currently serving with Reserve and National Guard units. Those roughly 70,000 federal workers serve as civilians while their unit is at home; but when the unit deploys overseas, they become reservists serving on active duty.

The British MoD has implemented five sponsored reserve projects.[17] The first project established the "Mobile Met Unit," which deploys to provide meteorological support to the Royal Air Force. That unit has been staffed with British government civilians since the 1960s, and those personnel were traditional reservists who volunteered to travel overseas to support the combat forces. Under the new arrangement, they can be activated more quickly and more easily, even in the absence of a broader general call-up. Deployments for this unit started more than four years ago.

Unlike that first project, which involved British government civilians, the remaining projects all employ contractors. The second project uses sponsored reservists to crew six strategic sealift roll-on/roll-off vessels.[18] Those ships operate as merchant ships during routine peacetime operations but provide maritime support during peacetime exercises and wartime operations. The contract civilian crew members become military officers and enlisted personnel upon activation.

The third project uses contractor personnel to provide ground support to British communications aircraft, the fourth project uses contractor personnel to drive and maintain a new generation of heavy equipment transporters, and the fifth project uses them to provide hydrographic systems engineers for a new generation of survey vessels.

The first three projects have already been used to support overseas operations. The first has been used for over four years, and the second and third have supported Operation Iraqi Freedom and Operation Enduring Freedom. The overall program is small, however: the five projects in total involve fewer than 350 sponsored reservists. The sealift project and the heavy equipment transport project are part of long-term service contracts (the sealift contract lasts 25 years) that allow the contractor to use those assets for commercial business at times when they are not needed by the British MoD.

In general, the British have used the concept of sponsored reserves as part of a new acquisition or program. (The exception is the meteorological support project.) The

17. Much of this information comes from Tom Allen, "Smart Acquisition and the Sponsored Reserves," *Defence Management Journal*, no. 23 (November 2003), pp. 40-42.

18. Roll-on/roll-off vessels are ships designed to carry vehicles, which can be rolled on at the port of embarkation and rolled off at the destination.

Table 4-2.

Estimated Savings from Sponsored Reserve Option

(Millions of dollars)

	2007	2008	2009	2010	2011	Total 2007 to 2011	Total 2007 to 2016
Savings							
Budget authority	200	410	640	880	910	3,040	8,070
Outlays	190	400	630	870	910	3,000	8,020

Source: Congressional Budget Office.

program offers several advantages. Training can be customized on a case-by-case basis depending on the type of military service and the operational environment in which the required support is likely to be delivered. Mandatory retirement age from reserve service can be applied flexibly, as well. Moreover, the British government can activate sponsored reservists more easily than traditional reservists, and call-up is not dependent on any particular degree of crisis.

Nevertheless, sponsored reservists are members of an existing reserve force and subject to service regulations. They are under military command and subject to the British equivalent of the UCMJ. The MoD can set military training requirements and standards. The MoD also can prevent individuals from quitting their jobs, if necessary. Sponsored reservists can also be required to undertake other duties, such as guard duties. That sort of flexibility is sometimes lacking in regular contracts.

A Possible U.S. Variant

A sponsored-reserve program in the United States, which would probably require legislation to establish, might consist of a contract (or contracts) for the delivery of services or equipment that included a provision in which the contractor agreed to maintain a specified portion of its workforce as members of the Individual Ready Reserve (IRR). Reservists in the IRR do not participate in regularly scheduled training with reserve units (one weekend per month and an additional two-week period every year), but under this concept would have to remain proficient in their military specialty through a combination of their routine work as contractors and, if necessary, additional periodic training. A sponsored reservist would act as a contract employee during peacetime but would agree to be "activated" to military status when deploying to perform the same job overseas. Currently, many contractors also serve as reservists; but when they deploy as military personnel, they do different jobs or work with different units than their peacetime contract function. Under the sponsored-reserve concept, the contractor would perform the same job with the same unit but would act as a member of the military when deployed.[19]

This option would institute a new program of sponsored reservists as a means of attracting and retaining high-quality skilled individuals, particularly in those functions that now rely extensively on contractors. To achieve the savings shown in Table 4-2, the option would reduce the total number of active-duty personnel performing logistics, installation or facility management, and physical security functions by 20 percent. That change would be implemented over a four-year phase-in period. Some of the 20,000 affected personnel are currently deployed to the Iraqi or Afghan theaters, and some (presumably smaller) number might remain deployed throughout the phase-in period of the option. The effect of the option on forces in-theater would be to replace the deployed subset of the 20,000 active-duty personnel with activated sponsored reservists.

CBO views Options 1 and 4 as mutually exclusive alternatives, because some of the logistics functions that Option 4 would transfer from active-duty personnel to the new sponsored reservists are the same functions that Option 1 would transfer from the LOGCAP contractor to uniformed military personnel (including active-duty soldiers as well as traditional reservists).[20]

19. This option (number 050-33) was outlined in Congressional Budget Office, *Budget Options* (February 2005), pp. 60-61.

20. Among the common functions are troop subsistence, food supply, traffic and transportation management, fire prevention and protection, laundry and dry cleaning operations, electrical plant and distribution systems, and water plant and distribution systems.

Successfully converting 20,000 positions—and reducing active-duty end strength by that amount—could save about $3 billion from 2007 through 2011. Some of the savings from this option would occur because sponsored reservists would have military-specific responsibilities only when they deployed. Thus, when not deployed, they would have more time available to perform their jobs, so fewer of them would be needed to substitute for a given number of military personnel.

This option would achieve some benefits of wholly privatized functions performed by contractors as well as those of functions performed by the military. It would place deployed contractors within the military chain of command, better ensuring military command and control, and would afford them the protections of military status. In particular, the conduct of sponsored reservists would be addressed by the Geneva Conventions and the UCMJ. Another advantage is that sponsored reservists could provide military capability in occupations that are hard to fill with military personnel or jobs that require cutting-edge technical expertise. As members of the IRR, those personnel would not count against legislated end-strength caps.

Converting active-duty positions to sponsored-reserve positions could create some difficulties, however. Although DoD is considering creating a sponsored-reserve program, implementation details have not been widely discussed. As a first step, a few demonstration projects could be preferable to the creation of a new personnel category. There might also be a concern about having personnel in uniform who had not received the same level of training and leadership development opportunities as current military service members.

The savings shown in Table 4-2 assume that the active-duty personnel replaced by sponsored reservists would be removed from the military's end strength. If that was not the case, the replaced military personnel would be freed up to perform other functions, but the savings would be smaller. The realized savings would depend on a more detailed specification of the disposition of the replaced military personnel.

APPENDIX

A

Assessing the Army's Capability to Replace Task Order 59 with Army Logistics Units

In order to assess the Army's ability to carry out the logistics support functions specified in Task Order 59, the Congressional Budget Office (CBO) considered a variety of criteria, including the number and type of units that would be required and the availability of those units in the Army's current force structure.

Determining Equivalent Army Units

To begin the process of identifying Army units that could provide the same level and quality of work provided by the current Logistics Civil Augmentation Program (LOGCAP) contractor, it was necessary first to understand the exact nature of the required tasks. The statement of work for Task Order 59 spells out, in detail, the specific tasks to be accomplished, including the number of Army units that require logistics support, the units' populations and locations in-theater, and the projected starting and ending dates for each discrete function.

Some 34 percent of deployable Army personnel are in combat-service-support occupations, and an additional 24 percent are in combat support (see Table 1-4 on page 17). That organic support includes most of the services purchased from the LOGCAP contractor. To determine the size and composition of an Army force package that would be necessary to completely replace the contractor, CBO followed the procedure outlined below:

- Matched the mission statements of existing Army unit types with each function or service outlined in Task Order 59.
- Calculated the number of Army units that would be needed to carry out the tasks now performed by the LOGCAP contractor. The ratio of that number to the total number of units available, together with constraints on deployment frequency, indicated the Army's flexibility to replace the contractor in fulfilling the task order. If few units were needed relative to the total number of units available in the Army's force structure, the necessary units could be assigned to logistics support and still leave sufficient units in the United States to rotate into the theater and provide relief. However, if the required number of units was large relative to the total force structure, it might be necessary to create new units to maintain the requisite rotation base.
- Determined how many units of each logistics unit type currently exist in the Army's force structure and where those units are located, including ongoing operations to which they may already be committed. That process generated the number of units in the Army force structure that would be available for providing logistics support.

Matching Army Units to Tasks

CBO identified appropriate Army unit types (for instance, the quartermaster field service company) by comparing the statement of work for Task Order 59 and unit mission descriptions. CBO obtained detailed information about the missions, capabilities, employment, and manning of Army units from an online database called WebTAADS, which is maintained by the U.S. Army Force Management Support Agency. CBO then identified and matched units at the Standard Requirements

Code (SRC) level to specific tasks described in Task Order 59.[1]

The number of units needed to perform the tasks spelled out in Task Order 59 depends on the workload required for each task. The statement of work explicitly details the expected output for certain tasks: for example, provision and maintenance of latrines, showers, and laundry services to meet the needs of base-camp populations. In other cases, that statement stipulates the capacity required of the contractor: for example, "the contractor shall be capable of receiving, transporting, and unloading up to 250 [cargo] pallets per day." Using those requirements, it is possible to determine the number of Army units that would be needed to perform specific tasks. CBO considered the following factors to determine the number of units needed:

- *Allocation rules based on the number of troops served.* The number of Army units needed to provide latrines, showers, and laundry services would be based on the ratio of the population served to the capacity of each unit. For example, allocation rules call for one quartermaster field service company to provide latrines, and a second company to provide showers and laundry services, per 21,000 troops served. The 130,000 troops in Iraq are located in six major clusters. Each cluster would require two quartermaster field service companies, or a total of 12 such units to replace the LOGCAP contractor in providing these services.

- *Comparison of units' capabilities with the capacity required of the contractor.* When the contractor is required to process up to 250 cargo pallets per day, one Army unit of the type allocated to the task (in this case, a transportation cargo transfer company) would have at least that much capability.

- *Comparison of units' equipment to that utilized by the contractor.* In situations where measures of output (such as the numbers of troops served or the amounts of cargo processed) were unavailable, CBO attempted instead to match the amount and type of equipment utilized by the LOGCAP contractor. For example, CBO estimates that during the period covered by the analysis, the contractor provided and operated power-generating equipment in the theater with a combined capacity of about 400 megawatts. On the basis of the capacity of Army power-generating units, CBO concluded that about 10 Army prime power engineering battalions would be needed to provide the same amount of power. CBO used a similar process to determine the number of Army transportation units that would be needed to fulfill the transportation mission in-theater.

- *Ratio of logistics support units to supported combat units in past deployments or scenarios in notional deployment plans.* CBO used this approach when the basis for allocating units to troops was not specified in unit documents or when the "capacity" approach was not applicable or straightforward. Some equipment maintenance units fall into this category. Here, past experience helped guide the method used to allocate units to tasks. CBO examined the composition of forces deployed—that is, the ratio of support units to combat forces—in past contingencies or in notional deployment plans. For example, one support unit of a certain type might be allocated per division.

In determining the number of Army units that would be required to provide logistics support, CBO assumed that Army units would provide those services in the same manner as the contractor, even when that approach was at odds with formal Army doctrine. For example, if the contract required the contractor to produce water in several different locations, CBO's approach would have Army units produce water at those same locations, even though water production would be more centralized, according to Army doctrine. CBO used this approach to best reflect the realities of the current Iraqi conflict.

Finally, CBO also considered the geographic dispersal of the troops supported. The base-camp sites, with varying numbers of resident troops, are dispersed throughout western, central, and northern Iraq. In most cases, CBO allocated support units so that each site had a dedicated unit, rather than forcing a single unit to service multiple

1. The SRC is a coding taxonomy that the Army uses to designate a unit and a particular version of its Table of Organization and Equipment. The Army uses the WebTAADS online database to manage its units' personnel, equipment, and command structure (which units are subordinate to which other units) at a fine level of detail. The units are listed in WebTAADS by SRC. The SRCs germane to this analysis vary in size from platoons of four soldiers to battalions of up to 657 soldiers. Note that those support units are organized differently from infantry units: the latter tend to be larger. Also note that a few support units are modular, meaning that their size can be tailored to meet specific needs.

sites. Thus, CBO allocated whole units to sites despite their having fewer resident troops than the support unit's capacity in some instances. That approach tended to increase the total number of units allocated to the task order.[2]

Table 3-1 on page 29 presents the Army force package and associated numbers of troops determined using this process. In addition to the units that actually perform the work, the table includes headquarters units for command and control.

Assessing the Availability of Army Units

After determining the size and composition of the Army force package required to perform the logistics tasks, the next step was to verify whether the Army had sufficient forces to do that work and still meet other commitments—including the need to maintain a rotation base. The Army has goals that limit the frequency and length of time that units may be deployed, and the Army provides for a rotation base consisting of units that must rotate from the United States to replace those units currently deployed. CBO's analysis considered not only whether the units were available outright but also took into account whether additional units would have to be added to the force structure to maintain the Army's rotation base.

CBO concluded that the Army would not be able to provide all of the functions detailed in Task Order 59 without creating additional units and would, in fact, need to create many more units in order to meet its rotation goals. As summarized in Chapter 3 of the main text, the Army currently has 950 units with 112,435 troops of the types that perform the functions in Task Order 59. (See Table 3-2 on page 30.) Table A-1 provides additional detail, decomposing the 950 units into the 38 distinct unit types or SRCs. In total, the Army would need only 177 units—a total of 12,067 troops—to provide the functions specified in Task Order 59. However, while the 950 existing units would provide more than the required capability for some functions, they would provide less than the required capability for others. Moreover, many of those units are already deployed to South Korea, Iraq, or Afghanistan, and would not be available to replace the contractor in Iraq. In order to fill in the gaps in capability, and to provide an adequate rotation base, the Army would need to create additional units.

Almost one-quarter of the units identified by CBO were already deployed to South Korea, Iraq, or Afghanistan during the period of performance for Task Order 59.[3] CBO assumed that those 222 deployed units—consisting of a total of 29,128 troops—would not be available to perform the functions in Task Order 59. Additionally, the troops in Iraq and Afghanistan would require a rotation base if logistics support was to be continuously provided over the long run.[4] The Army's goal for deployment frequency is 20 percent to 33 percent for active units.[5] This means that, at any one time, only one-fifth to one-third of active units are deployed. For reserve units, the goal is to limit call-ups to 17 percent of the time, or one year out of six. However, a one-year deployment would most likely be immediately preceded by a three-month unit training period. Thus, reserve units can be deployed only 13 percent of the time, or one year out of every 7.5 years. CBO assumed that the Army would meet these goals when possible, so that each deployed active unit would require at least two nondeployed units as a rotation base, and each deployed reserve unit would require at least 6.5 nondeployed units.[6]

There are two cases to consider when constructing the required rotation base for currently deployed units (those

2. The few exceptions to this rule are modular units whose constituent parts are fully capable of independent operation. The platoons in a prime power company are an example of this type of unit.

3. Data were provided to the Congressional Budget Office by the Department of Defense, December 2004.

4. Unit rotation is different from the individual-rotation policy now used in South Korea (and employed during World War II, the Korean War, and the Vietnam War). Individual rotation maintains the same unit in-theater over time but moves individual soldiers into and out of the unit. Thus, Army units stationed in South Korea do not require rotational counterparts in the United States.

5. Congressional Budget Office, *An Analysis of the U.S. Military's Ability to Sustain an Occupation in Iraq* (September 3, 2003), pp. 34-39.

6. In cases where the Army requires an even number of reserve units to perform services described in a given SRC, the number of units allocated for rotation equals that number times the factor 6.5, yielding a whole number. For example, two reserve units would require 13 rotational units. In cases where the Army requires an odd number of reserve units, CBO rounded up the rotational units to the next whole number. For example, three reserve units would require 20 rotational units (rounded up from 3 x 6.5 = 19.5 units).

Table A-1.

Total Authorized Units and Troops of Relevant Types

Unit Type	Active		Reserve and Guard		Total Authorized	
	Units	Troops	Units	Troops	Units	Troops
Command-and-Control Functions						
HHC Air Traffic Services Battalion	0	0	2	120	2	120
HHC Engineer Brigade	2	230	2	230	4	460
HHD Explosive Ordnance Disposal Battalion	4	124	3	93	7	217
HHD Medical Logistics Battalion	0	0	1	65	1	65
HHD Movement Control Battalion	4	252	5	315	9	567
HHD Ordnance Battalion (Ammunition)	0	0	12	624	12	624
HHD Ordnance Maintenance Battalion	5	245	18	882	23	1,127
HHD Supply and Service Battalion	2	114	22	1,254	24	1,368
Logistics Functions						
Air Traffic Services Company	1	101	1	101	2	202
Air Traffic Support Maintenance Company	1	75	0	0	1	75
Ammunition Ordnance Heavy Lift Platoon	16	704	31	1,364	47	2,068
Area Movement Control Team	19	304	22	352	41	656
Cargo Documentation Movement Control Team	8	88	57	627	65	715
Cargo Transfer Company	9	2,520	6	1,680	15	4,200
Combat Heavy Equipment Transport Company	8	2,392	37	11,063	45	13,455
Division Support Movement Control Team	10	100	8	80	18	180
Explosive Ordnance Disposal Company	41	902	12	264	53	1,166
Field Service Company	6	738	16	1,968	22	2,706
Fire Fighting Team	11	77	39	273	50	350
Fire Fighting Team Headquarters	1	4	10	40	11	44
Force Provider Company	0	0	5	175	5	175
Heavy Engineer Combat Battalion	9	5,913	33	21,681	42	27,594
Heavy Material Supply Company	0	0	3	570	3	570
Medical Detachment (Blood support)	1	30	1	30	2	60
Medium Truck Company (20 ft.)	1	174	24	4,176	25	4,350
Medium Truck Company (40 ft.)	8	1,352	61	10,309	69	11,661
Medium Truck Company (5,000 gal.)	4	680	18	3,060	22	3,740
Movement Control Regulating Team	9	252	46	1,288	55	1,540
Nondivisional Ordnance Maintenance Company	26	5,200	65	13,000	91	18,200
Petroleum Pipeline and Terminal Company	2	372	14	2,604	16	2,976
Port Movement Control Team	25	525	18	378	43	903
Preventive Medicine (Sanitation) Detachment	8	80	17	170	25	250
Prime Power Engineer Battalion	3	774	0	0	3	774
Repair Parts Team	0	0	2	108	2	108
Subsistence Platoon	2	114	0	0	2	114
Supply Company	10	1,250	33	4,125	43	5,375
Utilities Team Engineer Detachment	1	56	38	2,128	39	2,184
Water Purification and Distribution Company	2	272	9	1,224	11	1,496
All Functions						
Total	**259**	**26,014**	**691**	**86,421**	**950**	**112,435**

Source: Congressional Budget Office.

Note: HHC = headquarters and headquarters company; HHD = headquarters and headquarters detachment.

units not available to perform logistics support functions). First, for those SRCs that are currently meeting their rotation goals, CBO removed from the available pool both the units currently deployed to South Korea, Iraq, or Afghanistan, and the rotational units for the latter two operations. However, the Army is currently exceeding its rotation goals in Iraq and Afghanistan for 16 of the 38 relevant SRCs.[7] CBO assumed that the Army would continue to exceed its rotation goals for those SRCs rather than create additional units for the sole purpose of bringing currently deployed units within the goals. Thus, CBO did not charge any cost for expanding the rotation base for currently deployed units.

The distribution of available troops by function did not match the distribution of required functions. Because there are more troops than needed for some functions and too few for others, CBO displayed the existing units that matched the required SRCs and computed the shortfalls. CBO determined that, in combination, 39 active units and 65 reserve units could provide 104 of the 177 required units (see Table 3-2 on page 30). The remaining 73 units needed to perform the functions in Task Order 59 would have to be created. When new units needed to be created, CBO calculated those in a manner that preserved (as closely as possible) the current proportions of active and reserve units within each SRC. For example, SRC 01426A0 (air traffic services battalion headquarters) has two authorized reserve units that are both currently deployed and unavailable. Task Order 59 requires one unit of this type, so CBO assumed that the Army would create one additional reserve unit (see Table A-2).

7. Another 13 SRCs have no units currently deployed, indicating that the Army has chosen to use contractors in-theater rather than existing military capability.

Meeting the Rotation Goal

Some SRCs would have units available to use as a rotation base for the units providing the logistics support detailed in Task Order 59, but many others would not. Filling the functions in the task order continuously over a long period—while also participating in the other missions to which those units are already assigned in South Korea, Iraq, and Afghanistan—would exceed the Army's rotation goal for 32 of the 38 relevant SRCs. Because the most austere rotation goal is 13 percent for reserve units, the Army would need 6.5 nondeployed units and one deployed unit (a total of 7.5 reserve units) for every reserve unit required to perform the function. Similarly, the most austere rotation goal is 33 percent for active units; thus, the Army would need two nondeployed units and one deployed unit (a total of three active units) for every active unit needed to perform the function.

For the 177 deployed units providing logistics support—63 active units and 114 reserve units—the minimum rotation base would require that the Army use two nondeployed units for each active unit and 6.5 nondeployed units for each reserve unit (see Table 3-3 on page 34). That would require 126 nondeployed active units and 749 nondeployed reserve units (the latter figure incorporates rounding up to whole units for eight SRCs).

Satisfying the rotation goals in that fashion would require creating an additional 794 units (101 active and 693 reserve units) with 41,560 troops to serve as a rotation base (see Table A-3). The Army would continue to deploy more frequently than its goal for those SRCs where that is currently the case. CBO assumed that the Army would not create additional units to bring currently deployed units within the stated rotation goals.

Table A-2.

Breakdown of Units Required to Perform Functions in Task Order 59

	Existing Units					
	Active		Reserve and Guard		Total	
Unit Type	Units	Troops	Units	Troops	Units	Troops
Command-and-Control Functions						
HHC Air Traffic Services Battalion	0	0	0	0	0	0
HHC Engineer Brigade	1	115	0	0	1	115
HHD Explosive Ordnance Disposal Battalion	0	0	1	31	1	31
HHD Medical Logistics Battalion	0	0	1	65	1	65
HHD Movement Control Battalion	1	63	0	0	1	63
HHD Ordnance Battalion (Ammunition)	0	0	1	52	1	52
HHD Ordnance Maintenance Battalion	0	0	1	49	1	49
HHD Supply and Service Battalion	2	114	0	0	2	114
Logistics Functions						
Air Traffic Services Company	0	0	1	101	1	101
Air Traffic Support Maintenance Company	1	75	0	0	1	75
Ammunition Ordnance Heavy Lift Platoon	1	44	2	88	3	132
Area Movement Control Team	1	16	0	0	1	16
Cargo Documentation Movement Control Team	1	11	0	0	1	11
Cargo Transfer Company	0	0	0	0	0	0
Combat Heavy Equipment Transport Company	0	0	0	0	0	0
Division Support Movement Control Team	1	10	0	0	1	10
Explosive Ordnance Disposal Company	0	0	10	220	10	220
Field Service Company	0	0	1	123	1	123
Fire Fighting Team	11	77	9	63	20	140
Fire Fighting Team Headquarters	1	4	7	28	8	32
Force Provider Company	0	0	5	175	5	175
Heavy Engineer Combat Battalion	2	1,314	0	0	2	1,314
Heavy Material Supply Company	0	0	1	190	1	190
Medical Detachment (Blood support)	1	30	1	30	2	60
Medium Truck Company (20 ft.)	0	0	2	348	2	348
Medium Truck Company (40 ft.)	0	0	0	0	0	0
Medium Truck Company (5,000 gal.)	1	170	0	0	1	170
Movement Control Regulating Team	1	28	0	0	1	28
Nondivisional Ordnance Maintenance Company	4	800	0	0	4	800
Petroleum Pipeline and Terminal Company	0	0	0	0	0	0
Port Movement Control Team	1	21	0	0	1	21
Preventive Medicine (Sanitation) Detachment	2	20	13	130	15	150
Prime Power Engineer Battalion	3	774	0	0	3	774
Repair Parts Team	0	0	2	108	2	108
Subsistence Platoon	2	114	0	0	2	114
Supply Company	0	0	0	0	0	0
Utilities Team Engineer Detachment	0	0	6	336	6	336
Water Purification and Distribution Company	1	136	1	136	2	272
All Functions						
Total	**39**	**3,936**	**65**	**2,273**	**104**	**6,209**

Continued

Table A-2.

Continued

Unit Type	New Units					
	Active		Reserve and Guard		Total	
	Units	Troops	Units	Troops	Units	Troops
Command-and-Control Functions						
HHC Air Traffic Services Battalion	0	0	1	60	1	60
HHC Engineer Brigade	0	0	0	0	0	0
HHD Explosive Ordnance Disposal Battalion	0	0	0	0	0	0
HHD Medical Logistics Battalion	0	0	0	0	0	0
HHD Movement Control Battalion	0	0	0	0	0	0
HHD Ordnance Battalion (Ammunition)	0	0	0	0	0	0
HHD Ordnance Maintenance Battalion	0	0	0	0	0	0
HHD Supply and Service Battalion	0	0	1	57	1	57
Logistics Functions						
Air Traffic Services Company	0	0	0	0	0	0
Air Traffic Support Maintenance Company	0	0	0	0	0	0
Ammunition Ordnance Heavy Lift Platoon	0	0	0	0	0	0
Area Movement Control Team	0	0	0	0	0	0
Cargo Documentation Movement Control Team	0	0	0	0	0	0
Cargo Transfer Company	1	280	0	0	1	280
Combat Heavy Equipment Transport Company	0	0	1	299	1	299
Division Support Movement Control Team	0	0	0	0	0	0
Explosive Ordnance Disposal Company	0	0	0	0	0	0
Field Service Company	3	369	8	984	11	1,353
Fire Fighting Team	6	42	22	154	28	196
Fire Fighting Team Headquarters	0	0	0	0	0	0
Force Provider Company	0	0	5	175	5	175
Heavy Engineer Combat Battalion	0	0	0	0	0	0
Heavy Material Supply Company	0	0	0	0	0	0
Medical Detachment (Blood support)	1	30	2	60	3	90
Medium Truck Company (20 ft.)	0	0	0	0	0	0
Medium Truck Company (40 ft.)	0	0	2	338	2	338
Medium Truck Company (5,000 gal.)	0	0	0	0	0	0
Movement Control Regulating Team	0	0	0	0	0	0
Nondivisional Ordnance Maintenance Company	0	0	0	0	0	0
Petroleum Pipeline and Terminal Company	0	0	1	186	1	186
Port Movement Control Team	0	0	0	0	0	0
Preventive Medicine (Sanitation) Detachment	0	0	0	0	0	0
Prime Power Engineer Battalion	7	1,806	0	0	7	1,806
Repair Parts Team	0	0	2	108	2	108
Subsistence Platoon	5	285	0	0	5	285
Supply Company	1	125	4	500	5	625
Utilities Team Engineer Detachment	0	0	0	0	0	0
Water Purification and Distribution Company	0	0	0	0	0	0
All Functions						
Total	**24**	**2,937**	**49**	**2,921**	**73**	**5,858**

Continued

Table A-2.

Continued

Unit Type	Total Units					
	Active		Reserve and Guard		Total	
	Units	Troops	Units	Troops	Units	Troops
Command-and-Control Functions						
HHC Air Traffic Services Battalion	0	0	1	60	1	60
HHC Engineer Brigade	1	115	0	0	1	115
HHD Explosive Ordnance Disposal Battalion	0	0	1	31	1	31
HHD Medical Logistics Battalion	0	0	1	65	1	65
HHD Movement Control Battalion	1	63	0	0	1	63
HHD Ordnance Battalion (Ammunition)	0	0	1	52	1	52
HHD Ordnance Maintenance Battalion	0	0	1	49	1	49
HHD Supply and Service Battalion	2	114	1	57	3	171
Logistics Functions						
Air Traffic Services Company	0	0	1	101	1	101
Air Traffic Support Maintenance Company	1	75	0	0	1	75
Ammunition Ordnance Heavy Lift Platoon	1	44	2	88	3	132
Area Movement Control Team	1	16	0	0	1	16
Cargo Documentation Movement Control Team	1	11	0	0	1	11
Cargo Transfer Company	1	280	0	0	1	280
Combat Heavy Equipment Transport Company	0	0	1	299	1	299
Division Support Movement Control Team	1	10	0	0	1	10
Explosive Ordnance Disposal Company	0	0	10	220	10	220
Field Service Company	3	369	9	1,107	12	1,476
Fire Fighting Team	17	119	31	217	48	336
Fire Fighting Team Headquarters	1	4	7	28	8	32
Force Provider Company	0	0	10	350	10	350
Heavy Engineer Combat Battalion	2	1,314	0	0	2	1,314
Heavy Material Supply Company	0	0	1	190	1	190
Medical Detachment (Blood support)	2	60	3	90	5	150
Medium Truck Company (20 ft.)	0	0	2	348	2	348
Medium Truck Company (40 ft.)	0	0	2	338	2	338
Medium Truck Company (5,000 gal.)	1	170	0	0	1	170
Movement Control Regulating Team	1	28	0	0	1	28
Nondivisional Ordnance Maintenance Company	4	800	0	0	4	800
Petroleum Pipeline and Terminal Company	0	0	1	186	1	186
Port Movement Control Team	1	21	0	0	1	21
Preventive Medicine (Sanitation) Detachment	2	20	13	130	15	150
Prime Power Engineer Battalion	10	2,580	0	0	10	2,580
Repair Parts Team	0	0	4	216	4	216
Subsistence Platoon	7	399	0	0	7	399
Supply Company	1	125	4	500	5	625
Utilities Team Engineer Detachment	0	0	6	336	6	336
Water Purification and Distribution Company	1	136	1	136	2	272
All Functions						
Total	**63**	**6,873**	**114**	**5,194**	**177**	**12,067**

Source: Congressional Budget Office.

Note: HHC = headquarters and headquarters company; HHD = headquarters and headquarters detachment.

Table A-3.

Breakdown of New Units Required for a Rotation Base

Unit Type	Active		Reserve and Guard		Total	
	Units	Troops	Units	Troops	Units	Troops
Command-and-Control Functions						
HHC Air Traffic Services Battalion	0	0	7	420	7	420
HHC Engineer Brigade	1	115	0	0	1	115
HHD Explosive Ordnance Disposal Battalion	0	0	5	155	5	155
HHD Medical Logistics Battalion	0	0	7	455	7	455
HHD Movement Control Battalion	2	126	0	0	2	126
HHD Ordnance Battalion (Ammunition)	0	0	0	0	0	0
HHD Ordnance Maintenance Battalion	0	0	0	0	0	0
HHD Supply and Service Battalion	4	228	7	399	11	627
Logistics Functions						
Air Traffic Services Company	0	0	7	707	7	707
Air Traffic Support Maintenance Company	2	150	0	0	2	150
Ammunition Ordnance Heavy Lift Platoon	0	0	0	0	0	0
Area Movement Control Team	0	0	0	0	0	0
Cargo Documentation Movement Control Team	0	0	0	0	0	0
Cargo Transfer Company	2	560	0	0	2	560
Combat Heavy Equipment Transport Company	0	0	7	2,093	7	2,093
Division Support Movement Control Team	0	0	0	0	0	0
Explosive Ordnance Disposal Company	0	0	63	1,386	63	1,386
Field Service Company	6	738	59	7,257	65	7,995
Fire Fighting Team	34	238	202	1,414	236	1,652
Fire Fighting Team Headquarters	2	8	43	172	45	180
Force Provider Company	0	0	65	2,275	65	2,275
Heavy Engineer Combat Battalion	3	1,971	0	0	3	1,971
Heavy Material Supply Company	0	0	5	950	5	950
Medical Detachment (Blood support)	4	120	20	600	24	720
Medium Truck Company (20 ft.)	0	0	6	1,044	6	1,044
Medium Truck Company (40 ft.)	0	0	13	2,197	13	2,197
Medium Truck Company (5,000 gal.)	0	0	0	0	0	0
Movement Control Regulating Team	0	0	0	0	0	0
Nondivisional Ordnance Maintenance Company	0	0	0	0	0	0
Petroleum Pipeline and Terminal Company	0	0	7	1,302	7	1,302
Port Movement Control Team	0	0	0	0	0	0
Preventive Medicine (Sanitation) Detachment	4	40	81	810	85	850
Prime Power Engineer Battalion	20	5,160	0	0	20	5,160
Repair Parts Team	0	0	26	1,404	26	1,404
Subsistence Platoon	14	798	0	0	14	798
Supply Company	2	250	26	3,250	28	3,500
Utilities Team Engineer Detachment	0	0	30	1,680	30	1,680
Water Purification and Distribution Company	1	136	7	952	8	1,088
All Functions						
Total	**101**	**10,638**	**693**	**30,922**	**794**	**41,560**

Source: Congressional Budget Office.

Note: HHC = headquarters and headquarters company; HHD = headquarters and headquarters detachment.

APPENDIX

B

Sample Calculations to Determine the Required Number of Army Field Service Companies

One function provided under the statement of work for Task Order 59 is that of field services, which includes the provision of latrines, showers, and laundry services to 130,000 troops. The Congressional Budget Office (CBO) determined that if the Army were to assume responsibility for those services, the correct type of unit to provide them would be the field service company.[1] The purpose of this appendix is to illustrate CBO's methodology for calculating the required number of Army support units, by applying that methodology to the case of field service companies.

The Army's allocation rules call for one field service company per 21,000 troops served. The 130,000 troops in Iraq are located in six major clusters containing an average of just over 21,000 troops each, but with some variation among the clusters. On that basis alone, a few of the six clusters would require two field service companies apiece. Moreover, a single field service company would have difficulty providing all of the functions (latrines, showers, and laundry services) even to a population of exactly 21,000 troops. Thus, CBO assigned two field service companies to each of the six clusters, allowing the two companies at each cluster to divide the workload across functional lines (for example, one of the companies might maintain the latrines and showers while the other company would provide laundry services). In total, the Army would require 12 field service companies—a total of 1,476 troops—to replace the Logistics Civil Augmentation Program (LOGCAP) contractor in providing those services.

1. The Army identifies its unit types with a taxonomy known as the Standard Requirements Code (SRC). Field service companies are identified as SRC 10414L000.

Availability of Army Units

The Army has currently authorized six active and 16 reserve field service companies. One of the active units is in South Korea and not available to support Operation Iraqi Freedom (OIF). Two active and two reserve units are already supporting OIF. The Army's rotation goals stipulate that each active unit should deploy no more than 33 percent of the time, which means that the two active units participating in OIF require a rotation base of four nondeployed units.[2] But only three such units are available (six units authorized minus one unit in South Korea minus two units in Iraq), so the rotation goal is not being achieved for active field service companies. As a result, the Army does not have a source of existing active units to provide the field service function in Task Order 59.

Creating Units to Perform the Field Service Function

The Army's rotation goals require that each reserve unit mobilize only 13 percent of the time, so the two reserve field service companies already in Iraq would need a nondeployed rotation base of 13 reserve units. Removing those 15 units from the total of 16 reserve field service companies authorized in the Army leaves only one reserve

2. The Army maintains a rotation base in the United States where soldiers can recover from overseas deployments, spending more time in training and with their families. The Army's goal is that, at any given time, no more than one-third of active units should be deployed, while the remaining active units reside in the rotation base. Thus, for each active unit that the Army assigns to perform a function (such as field services), the Army must either identify in its existing force structure or create two additional units to serve as the rotation base. Similarly, the Army's goal is that no more than 13 percent of reserve units should be mobilized at any given time. Thus, for each reserve unit mobilized to perform a function, the Army must identify or create a total of 6.5 reserve units as a rotation base (so that one reserve unit, or 13 percent, is mobilized at any one time from a total of 7.5 units).

unit to provide the field service function in Task Order 59. Because a total of 12 units would be needed to provide the field service function, the Army would have to create 11 additional units. CBO assumed that the Army would create three active units and eight reserve units, thereby keeping the authorized active/reserve mix as close as possible to the current level. (The old mix was six active units to 16 reserve units, and the new mix would be nine active units to 24 reserve units.)

Creating Units to Serve as a Rotation Base

In total, the Army would need three active field service companies (all new) and nine reserve field service companies (one existing and eight new) to perform the entire field service function currently included in Task Order 59. CBO's calculations were based on the assumptions that active units would rotate to relieve active units and that reserve units would relieve reserve units, and that the Army would deploy as much as possible while meeting both its active and reserve rotation goals. However, no existing field service companies are available to serve as a nondeployed rotation base. Thus, the Army would have to create six active units and 59 reserve units to populate the rotation base.[3]

To summarize, the Army would require a total of nine active units and 68 reserve units to provide the necessary field service function. Three active units and nine reserve units would be performing the function at any given time, while six active units and 59 reserve units would be serving as a nondeployed rotation base. One of the reserve units already exists, but the rest would have to be created.

Cost Calculations for Army Field Service Companies

Incremental Costs to the Army of Assuming Responsibility for the Field Service Function

The incremental costs to the Army of providing the field services specified in Task Order 59 would include not only the costs of deploying existing units but also the costs of maintaining a rotation base in the United States (see Table B-1). The rotation base allows soldiers to recover from overseas deployments and to spend more time in training and with their families.[4]

According to CBO's estimates, the one existing reserve unit that could be used to provide the field service function would operate at 7.5 times the peacetime operating tempo, generating costs of $21.1 million a year to deploy (beyond its routine peacetime operating costs).[5] The unit would also incur a periodic contingency cost of $170,000 at the start of each five-year deployment in CBO's notional wartime scenario (described in Chapter 3). Taken together, costs incurred by that existing reserve unit during the first year of deployment would total $21.3 million.

The eight new reserve units would each have onetime acquisition costs of $12.0 million for personnel and equipment, annual routine operating costs of $2.5 million, and annual deployment costs equal to those incurred by existing reserve units. Thus, the eight new reserve units would require $96 million for acquisition costs, plus $190 million for the first year of a deployment.

The three new active-component units used to provide the field service function would cost $12.9 million each to acquire. They would incur annual routine operating costs of $8.3 million apiece and additional deployment costs of $11.3 million per year (at 7.5 times the peacetime operating tempo). They would also incur periodic contingency costs of $137,000 each at the start of every five-year deployment. Together, the three new active

3. For each of the nine reserve field service companies (whether existing or new), the Army would need to create 6.5 new rotational units. That requirement translates into 58.5 rotational units, which rounds up to 59 whole units.

4. Incremental costs represent the change in the Army's budget that would result from a decision to obtain logistics support using Army units rather than a LOGCAP contractor. The Army's current budget includes funding for the routine operating costs of existing units (such as pay for active-duty military personnel, peacetime training exercises, and regular equipment maintenance). Incremental costs are measured over and above that baseline.

5. Operating tempo is the rate at which equipment is used during training or operations. Operating tempo for vehicles is measured in miles driven per vehicle per year. Operating tempo for stationary equipment, such as electrical generators, may be measured in hours of utilization per year. The factor of 7.5 represents an average for all types of equipment used in Operations Iraqi Freedom and Enduring Freedom; see Congressional Budget Office, *The Potential Costs Resulting from Increased Usage of Military Equipment in Ongoing Operations* (March 18, 2005).

Table B-1.

Cost Analysis for Army Field Service Companies

(Millions of 2005 dollars)

	Onetime Costs[a]	Periodic Contingency Costs[b]	Annual Contingency Costs[c]	Annual Routine Operating Costs[d]	20-Year Total
			Costs per Unit		
Active	12.9	0.1	11.3	8.3	n.a.
Reserve and Guard	12.0	0.2	21.1	2.5	n.a.
			Costs Over 20-Year Scenario		
Costs to Perform Mission					
Existing units					
Active (0)	n.a.	n.a.	n.a.	n.a.	n.a.
Reserve and Guard (1)	n.a.	0.2	21.1	n.a.	211.2
New units					
Active (3)	38.8	0.4	33.9	24.8	874.5
Reserve and Guard (8)	96.0	1.4	168.7	20.2	2,189.3
Total	134.8	2.0	223.6	45.0	3,275.0
Costs to Provide Rotation Base					
Existing units					
Active (0)	n.a.	n.a.	n.a.	n.a.	n.a.
Reserve and Guard (0)	n.a.	n.a.	n.a.	n.a.	n.a.
New units					
Active (6)	77.6	n.a.	n.a.	49.6	1,070.3
Reserve and Guard (59)	707.8	n.a.	n.a.	148.8	3,684.3
Total	785.4	n.a.	n.a.	198.5	4,754.6
Total for Field Services	**920.2**	**2.0**	**223.6**	**243.4**	**8,029.6**

Source: Congressional Budget Office.

Note: n.a. = not applicable.

a. Onetime costs include the hiring and training of personnel and the acquisition of equipment for additional Army units. Those costs would be incurred only in the first year, when the Army decided to provide logistics services in-house. CBO assumed that existing units would already be fully equipped; thus, there would be no acquisition costs for those units. Equipment replacement is included under annual contingency and routine operating costs.

b. Periodic contingency costs occur in the first year of each contingency operation and include the costs to procure equipment and construct facilities needed specifically for that operation.

c. Annual contingency costs occur in each year of a contingency operation, or for 10 years during the period of this analysis.

d. Routine operating costs occur each year—or 20 times during the period of this analysis. Half of the routine operating costs for additional units would be incurred during periods of contingency operations. Funding for those routine costs could be used to pay for a portion of the costs of contingency operations. Routine peacetime operating costs for existing units are excluded from this analysis. Those costs, though incurred by the Army, are already included in the Army's peacetime budget and would not be affected by the Army's decision to provide the field service function using Army units.

units would have onetime acquisition costs of $39 million, plus $59 million during the first year of a deployment.

In total, the three active units and nine reserve units used to provide the field service function would incur onetime costs of $135 million and first-year deployment costs of $271 million. Because the periodic set-up costs would not be incurred between the second and fifth years of deployment, those years would be slightly less costly at $269 million annually. Those totals exclude the routine peacetime operating costs of the one existing reserve unit because the Army already incurs those costs with its existing force structure, whether or not it decides to perform the functions required by Task Order 59. (The omitted cost is $2.5 million.)

Incremental Costs of the Rotation Base

The six active units and 59 reserve units that would be needed to create a rotation base would also impose incremental costs on the Army. The acquisition costs and routine peacetime operating costs per unit would be the same as those outlined above, but there would be no deployment costs for units in the rotation base. Thus, the units created for the rotation base would incur one-time costs of $785 million and annual costs of $198 million.

Total Incremental Costs to the Army

For the Army to provide the field service function, and to create and maintain an associated rotation base, would require onetime costs of $920 million, periodic contingency costs of $2 million, and annual operating costs of $224 million during deployment. Annual peacetime operating costs would be $243 million.

APPENDIX

C

The Methodology Behind the Cost Analysis

The Congressional Budget Office (CBO) developed a specific set of calculations to compare the contractor's costs under the Logistics Civil Augmentation Program (LOGCAP) with the estimated costs for providing the same logistics support using Army units. CBO's methodology is described below.

Estimating the Costs for Logistics Support Under LOGCAP

The current LOGCAP contractor, Kellogg, Brown & Root (KBR), provided to CBO its rough-order-of-magnitude cost estimate for implementing the work required under Task Order 59 over a period of one year—from June 13, 2003, to June 12, 2004. KBR's estimate covered logistics services to be provided at 82 locations under that task order. In addition, KBR provided supplemental data that contained considerably greater detail for 10 of those 82 locations. Together, the 10 locations accounted for 55 percent of the total costs estimated by the contractor for Task Order 59 during the period of performance.[1]

KBR's estimate included labor and nonlabor components for a variety of services, such as:

- Air-terminal and airfield operations;
- Ammunition storage, maintenance, and supply;
- Base-camp construction;
- Base-camp operation and maintenance;
- Communications and information technology services;
- Electric power generation;
- Equipment maintenance;
- Firefighting services;
- Food, food service, and dining facility operations;
- Fuel distribution;
- Hazardous-materials management;
- Laundry services;
- Morale, welfare, and recreation;
- Procurement, property management, and supply support;
- Transportation; and
- Water and ice distribution.

Although the cost estimate provided by Kellogg, Brown & Root covered an interval of one year, the period of analysis for this study spanned 20 years. While CBO did estimate costs for several alternative scenarios—differing in the duration, frequency, and sequencing of various contingency operations—most results described in this appendix apply to CBO's base-case scenario: a 20-year cycle of alternating contingency operations and peacetime operations, each lasting five years.

To extrapolate costs for that 20-year period using only one year of contractor data, CBO segregated the costs in KBR's estimate on the basis of whether those costs were

1. The 10 locations are Baghdad International Airport, Camp Victory Main, Camp Victory North, Forward Operating Base Gabe, Logistics Support Area Anaconda, Logistics Support Area Diamondback, Rifles Base, Site C5 Gunner, Site H1 DMAIN, and Theater Transportation Mission.

nonrecurring or recurring. (Nonrecurring costs include expenditures for facilities and equipment purchased once—at the outset of operations. Recurring costs include pay for contractor personnel and the costs of purchased services, supplies, and materials that are incurred throughout the entire period of contingency operations.) CBO then analyzed those data to determine which of the contractor's costs would also be incurred by the Army if it provided logistics services using its own support units.

Nonrecurring Costs

At the start of a contingency operation, the contractor acquires—and bills the Army for—fixed assets such as buildings, living quarters, and other facilities. Those one-time costs include both the labor and materials for facilities construction and emplacement. CBO assumed that, with regular maintenance, those fixed assets would last for the duration of the operation (five years in this analysis). At the outset of the contingency operation the contractor also buys many durable goods, such as buses, computers, cranes, forklifts, fuel tanks, freight trucks, ice-manufacturing plants, passenger vehicles, phones, water wells, and other equipment. By examining KBR's rough-order-of-magnitude cost estimate, CBO identified $2.7 billion (in 2005 dollars) in costs for those nonrecurring items.

All equipment purchased by the contractor becomes the property of the Army. CBO assumed that at the end of each five-year contingency operation, any equipment that was not available through the Department of Defense's supply system would be donated to the host nation, left in that country as prepositioned stocks for use in future contingency operations, or otherwise disposed of and therefore not available for future contingency operations. (According to CBO's estimates, nonrecurring equipment costs would account for less than 3 percent of total LOGCAP costs over the 20-year period considered in this analysis. If some of the equipment purchased for the first contingency operation was available for use in a second operation, the resulting reduction in nonrecurring costs relative to those estimated here would probably be very small.) CBO also assumed that the next contingency operation would occur in a different country and that facilities constructed for the first operation would not be of use in the next one. Because CBO's scenario assumed two separate contingency operations, the contractor would incur those nonrecurring costs again at the start of the second operation—for a total cost of $5.4 billion over 20 years.

Recurring Costs

Costs incurred to pay for contractor personnel and to purchase supplies and materials arise continuously throughout the one-year period covered by Kellogg, Brown & Root's cost estimate. In some instances, KBR's estimates for costs related to those recurring items covered a period of less than one year because the function could not be performed until the necessary facilities were constructed, the number of personnel being supported increased during the period of performance (reflected in a "change order" to the contract language, or the function was added to the statement of work after KBR had begun fulfilling the terms of the contract in June 2003. CBO extrapolated those costs to arrive at an annualized estimate.

Estimated Costs for 10 Selected Sites

Kellogg, Brown & Root estimated that it would cost $2.8 billion (or $2.9 billion in 2005 dollars) to provide logistics support at the 10 sites CBO analyzed for this report for the period between June 2003 and June 2004. However, KBR's cost estimate included certain functions that were provided for the full year, and other functions that were provided for only a portion of the year. CBO normalized KBR's estimate to a full year for all services, bringing the total to $3.2 billion, or 11 percent more than KBR's estimate. Nonrecurring costs accounted for $1.5 billion (about 46 percent) of the estimated costs, while recurring costs accounted for the remainder ($1.8 billion). CBO estimated that of the $3.2 billion, $1.6 billion (48 percent) would be incurred by the Army if it provided logistics services using its own support units. Those costs cover such items as food and dining facility operations, construction materials, and billeting facilities, and are in addition to other costs estimated using traditional Army data sources and cost models.

Estimated Costs Extrapolated to All of Task Order 59

Kellogg, Brown & Root estimated that the cost of providing logistics support to all 82 sites under Task Order 59 would total $5.2 billion (or $5.3 billion in 2005 dollars) between June 2003 and June 2004. CBO increased that estimate by 11 percent—to $5.9 billion—to arrive at an annualized cost for the entire task order, assuming that the portion of logistics services that would be provided for less than a full year for the task order as a whole would be similar to that portion of work at the 10 selected sites. CBO assumed that the ratio of recurring to nonrecurring costs for the task order as a whole would be consistent

with the 10 sites studied in detail. Thus, CBO estimated nonrecurring costs of $2.7 billion (or 46 percent) and recurring costs of $3.3 billion on an annualized basis for the entire task order. (See Appendix D for a discussion of how much the total cost estimate would vary if the ratio of recurring to nonrecurring costs was different from that assumed here.)

Because KBR's estimates covered a period of one year (or less in some cases), they excluded the costs to replace vehicles and other durable goods that might wear out over the five-year contingency operation assumed in this analysis. Thus, CBO also estimated additional recurring costs for the periodic replacement of durable goods. (CBO recently completed a study of the impact on equipment life of increased usage during contingency operations. That study found that, on average, equipment that ordinarily would last 20 years during routine use would last only two to three years in demanding contingency operations such as Operation Iraqi Freedom.)[2] On the basis of analysis of KBR's data, CBO estimates that replacing such equipment would cost an average of $300 million each year over the five-year period—or approximately one-third of the cost of durable goods purchased at the outset of the contingency operation. (When calculating the cost of providing logistics support with Army units, CBO included a similar charge for the recurring costs to replace the Army's equipment.)

The recurring costs described above total about $3.6 billion and would be incurred each year of the contingency operation but not during the intervening peacetime years. During those peacetime years, the contractor would incur expenses to maintain its ability to rapidly provide logistics support under the terms of the LOGCAP contract. The contractor would also have to update deployment plans and maintain lists of vendors needed for supplies and equipment. Those costs would be relatively small, however—on the order of a few million dollars each year or slightly less than $100 million over 20 years, CBO estimates.

Thus, under a scenario of 20 years—with alternating five-year periods of contingency operations separated by five years of routine peacetime operations—CBO estimates that it would cost the Army $41.4 billion to acquire services similar to those specified in Task Order 59 (see the final column of Table 3-4 on page 38).

Estimating the Costs for Logistics Support Using Army Units

CBO estimated the incremental costs of providing logistics services using Army units instead of a LOGCAP contract. Incremental costs are those that the Army would have to incur in excess of the amounts already budgeted for routine military operations of existing units. For example, training costs during peacetime and basic pay for personnel in Army units that already exist in the force structure would not be incremental and thus were not included in this cost estimate.

CBO estimated that it would cost $78.4 billion over 20 years to obtain logistics services using Army units. Units deployed to provide logistics services would account for $42.7 billion of those costs, while another $35.7 billion would be required to maintain a rotation base for contingency operations that extended beyond one year. Because the Army's goal is to limit the frequency of deployments for active units to no more than one year out of three, CBO estimated that the Army would need a total of three active units for every unit deployed. During any year, there would be one unit deployed, a second unit preparing to deploy as a replacement, and a third unit recovering from a deployment that occurred the previous year. For reserve units, the Army's goal is to mobilize them at most one-sixth of the time. However, a one-year deployment for them would probably be immediately preceded by a three-month training period, so a reserve logistics unit would be mobilized for a total of 15 months. To ensure that the 15-month mobilization occurred only one-sixth of the time over the long run, the reserve components would require 6.5 units in the rotation base for each unit deployed (see Figure 3-1 on page 31).

Costs of Army Units Needed to Perform the Mission

CBO divided its estimate of incremental costs into two parts: the costs for units already in existence and available to provide logistics support; and (because the Army does not currently have enough units to perform the entire mission) costs for creating and deploying the additional units that would be needed to fulfill the logistics mission. CBO estimates that the Army would require a total of 177 active and reserve units to provide the same type of logistics services that Kellogg, Brown & Root now provides under Task Order 59. Of those units, 104 are cur-

2. Congressional Budget Office, *The Potential Costs Resulting from Increased Usage of Military Equipment in Ongoing Operations* (March 18, 2005).

rently in the Army force structure and available for deployment. The remaining 73 units would need to be established and filled with personnel and equipment before they could be deployed.

Contingency Operations Costs for Existing Units. According to CBO's estimates, the Army has 104 units of varying types—ranging from ammunition handlers to engineer detachments, medical teams, supply units, and truck companies, among others—that could perform the tasks currently assigned to the LOGCAP contractor (see Table C-1). The Army's regular budget includes funding to pay for personnel and for routine operation of the units in the current force structure. However, that budget does not include the incremental costs of contingency operations. Over the 20-year scenario of this study, CBO estimates that contingency costs for the 104 units would total about $18.5 billion (this estimate appears in the final column of Table 3-4 on page 38). The $18.5 billion in costs would break down as follows:

- $2.6 billion for personnel;
- $450 million for personnel support;
- $14.3 billion for operating support, including $1.4 billion for periodic expenses and $8.7 billion in recurring expenses taken from KBR's cost estimate; and
- $1.2 billion for transportation to and from the area of operations.

Personnel Costs. Incremental personnel costs include pay and allowances for reserve-component service members called to active duty, as well as special pay and allowances (including imminent-danger pay, family separation allowance, and hardship duty pay) for both active-duty and reserve personnel who are deployed for contingency operations. (Pay and routine allowances for active-duty personnel are not considered incremental costs because they are funded in the Army's regular budget and would be incurred regardless of whether those personnel deployed in a contingency operation or remained at their home station.) In CBO's estimation, those costs, which would recur in each year of the contingency operation, would total $2.6 billion over 20 years.

To estimate those costs, CBO first quantified the incremental personnel costs of Army Reserve and National Guard service members called to active duty to support a contingency. This calculation involved multiplying the numbers of officers, warrant officers, and enlisted personnel in each Army Reserve and National Guard unit by the appropriate pay and allowance rates derived from Army pay tables and data provided by the Defense Manpower Data Center (DMDC). To complete the calculation, CBO subtracted the pay and allowances that service members would have received for performing routine reserve duty.

CBO assumed that during the contingency operations considered in this report, personnel would be deployed to a designated danger area, such as Iraq or Afghanistan, and would receive imminent-danger pay of $225 per month. Next, CBO estimated the incremental cost of the family separation allowance—currently $250 per month for deployed personnel who have spouses or children—by multiplying that figure by the number of personnel in all 104 units and by the percentage of deployed personnel with families as reported by DMDC (approximately 60 percent).

Finally, all personnel involved in contingency operations receive hardship duty pay. CBO estimated the cost of this special pay on the basis of average rates—about $55 per month—derived from the Army's budget justification books for its military personnel appropriations.

Personnel Support Costs. Personnel support includes the cost of special clothing and equipment that soldiers need to operate in a particular area or climate; the cost of medical support to prepare soldiers for deployment; and the cost of other services, such as mail delivery to deployed troops, family support programs, and morale, welfare, and recreation programs. CBO calculated the costs for those items and services using per capita factors developed by the Institute for Defense Analyses (IDA) and by the Deputy Assistant Secretary of the Army, Financial Management and Comptroller, Cost and Economics. On the basis of those data, CBO determined that personnel support costs for existing Army units would total $450 million over 20 years.

Operating Support Costs. For Army units that would provide logistics services in place of the LOGCAP contractor, operating support costs would include costs for ammunition, the construction and maintenance of temporary facilities in the area of operations, fuel, replacement parts, and other supplies. The category would also include costs for essential services, such as medical sup-

Table C-1.

Existing Units Available to Provide Logistics Services

Unit Type	Number of Units	Number of Troops
Command-and-Control Functions		
HHC Engineer Brigade	1	115
HHD Explosive Ordnance Disposal Battalion	1	31
HHD Medical Logistics Battalion	1	65
HHD Movement Control Battalion	1	63
HHD Ordnance Battalion (Ammunition)	1	52
HHD Ordnance Maintenance Battalion	1	49
HHD Supply and Service Battalion	2	114
Logistics Functions		
Air Traffic Services Company	1	101
Air Traffic Support Maintenance Company	1	75
Ammunition Ordnance Heavy Lift Platoon	3	132
Area Movement Control Team	1	16
Cargo Documentation Movement Control Team	1	11
Division Support Movement Control Team	1	10
Explosive Ordnance Disposal Company	10	220
Field Service Company	1	123
Firefighting Team	20	140
Firefighting Team Headquarters	8	32
Force Provider Company	5	175
Heavy Engineer Combat Battalion	2	1,314
Heavy Material Supply Company	1	190
Medical Detachment (Blood support)	2	60
Medium Truck Company (20 ft.)	2	348
Medium Truck Company (5,000 gal.)	1	170
Movement Control Regulating Team	1	28
Nondivisional Ordnance Maintenance Company	4	800
Port Movement Control Team	1	21
Preventive Medicine (Sanitation) Detachment	15	150
Prime Power Engineer Battalion	3	774
Repair Parts Team	2	108
Subsistence Platoon	2	114
Utilities Team Engineer Detachment	6	336
Water Purification and Distribution Company	2	272
All Functions		
Total	**104**	**6,209**

Source: Congressional Budget Office.

Note: HHC = headquarters and headquarters company; HHD = headquarters and Headquarters detachment.

port and communications, as well as costs for training conducted immediately prior to deployment or during the contingency operation to maintain proficiency. These costs would total $14.3 billion over the 20-year period, including $1.4 billion for periodic expenses and $8.7 billion in recurring expenses taken from KBR's cost estimate.

CBO estimated the costs for most supplies, medical support, unit training, facilities support, and communications services by multiplying the number of soldiers in each unit by per capita cost factors for those items (as developed by IDA). The costs for fuel, consumable supplies (for instance, filters, seals, lubricating oils), and spare parts were estimated on the basis of the type and quantity of equipment in each unit, the cost of operating that equipment for a given unit of measurement (such as hours or miles), and the frequency with which that equipment would be used in a contingency operation. Each unit's Table of Organization and Equipment (TOE) lists the types and quantity of equipment assigned to it.[3] The average costs for fuel, replacement parts, and consumable supplies for operating each item of equipment were taken from the Army's Operating and Support Management Information System (OSMIS) database.[4] That database also includes information on the rate at which a particular unit uses an item of equipment during routine peacetime operations. CBO assumed that in contingency operations, the Army would use equipment at 7.5 times the peacetime rate, on average. (Most operating support costs are not sensitive to changes in the equipment usage rate alone. Applying usage rates of 2.5 times the peacetime rate rather than 7.5 times that rate would reduce the estimate of contingency costs by about 4 percent and that of total costs by about 2 percent.)

The Army would also incur the incremental expenses of rebuilding or replacing equipment that had been degraded, damaged, or destroyed from more frequent and vigorous use than is typical for routine peacetime operations. To calculate that cost, CBO grouped the major equipment items in each unit into three categories: tracked vehicles, trucks and other vehicles, and all other support equipment. In an earlier study, CBO determined that tracked vehicles have a useful life of 30 years when operated at peacetime rates. During contingency operations in Southwest Asia, however, those tracked vehicles would be used at five times the peacetime rate.[5] For trucks, CBO assumed a 20-year useful life and an operating tempo in contingency operations that would be equal to 10 times the routine usage. For all other equipment, CBO assumed a useful life of 20 years and an operating tempo of five times the routine rate during contingencies. Thus, tracked vehicles would need to be replaced every six years, trucks and other vehicles every two years, and all other equipment every four years. On average, equipment would be worn out at 7.5 times the rate experienced in peacetime use.

Using data provided by the Army, CBO multiplied the quantity of equipment in each unit's TOE by equipment cost factors to calculate the total acquisition cost of equipment in each of those three categories.[6] CBO divided the resulting estimate by the expected useful life during contingency operations to estimate the annual cost to rebuild or replace a unit's damaged or destroyed equipment. For the 104 existing units, that cost would amount to about $200 million a year. The 73 additional units would incur another $250 million a year to replace worn-out equipment—a total of $450 million, or 13 percent of the estimated annual contingency cost for all units that would provide logistics services. That amount is about one-third higher than the cost to replace equipment procured by the LOGCAP contractor. If the rate of wear and tear was different from that estimated here, the

3. The Army monitors equipment use with different units of measurement depending on the type of equipment. Aircraft use is measured in hours, while the use of tanks, combat vehicles, and transport equipment is measured in miles. The use of some types of support equipment, such as mobile electrical generators, is tracked in hours. Costs for other items are measured as an average cost over a fixed period of time, such as months or years.

4. The OSMIS database reports actual equipment use, fuel consumption, and maintenance costs of equipment for all Army organizations.

5. Congressional Budget Office, *The Potential Costs Resulting from Increased Usage of Military Equipment in Ongoing Operations*. Although tanks are the most expensive tracked vehicles in the Army's inventory, tanks have a purely combat mission and are not operated by KBR. However, KBR does operate other equipment purchased with funds from the Army's Weapons and Tracked Combat Vehicles appropriation. For example, KBR operates the Army's M88 tank recovery vehicle, which is used to transport immobilized tanks back to a repair shop. The Army provides some M88s to KBR as government-furnished equipment, and other M88s are operated by Army units.

6. The current cost of Army equipment was derived from prices in Army Supply Bulletin 700-20, *Official List of Army Adopted Items of Materiel and List of Reportable Items* (December 2004).

costs of using either the LOGCAP contractor or Army support units would change by similar amounts.

In addition to the costs discussed above, CBO determined that some of the costs incurred by Kellogg, Brown & Root for work performed under the LOGCAP contract would also be incurred by the Army. For example, the cost of construction materials was not included in the annual operating cost data that CBO used to estimate costs for Army construction units. KBR also hired foreign nationals to perform many tasks, and CBO believes the Army would also hire foreign nationals for some of that work (for instance, groundskeeping and housecleaning) rather than assign soldiers to perform these tasks. In other cases, CBO added KBR's costs to the estimate of Army costs in an attempt to eliminate possible differences in quality between the goods and services provided by KBR and those provided with Army equipment and personnel.

Some of KBR's periodic expenses—those incurred in the first year of each contingency operation—would also be incurred by the Army. For example, KBR purchased air-conditioned living shelters similar to mobile homes to house many of the troops in Iraq, while the Army would typically house its deployed soldiers in tents reinforced with plywood and lumber if it provided logistics support. Thus, CBO added the acquisition cost of the KBR-purchased shelters to the estimate of Army costs to create a more "apples-to-apples" comparison of quality, and removed the cost of Army personnel, equipment, and supplies that would normally be used to perform that service.

Certain items that KBR purchased at the outset of the contingency operation would not routinely be allotted to Army units providing logistics support to the combat forces. CBO allowed for those items by including additional costs in the estimate of the Army's costs for periodic expenses. Examples of such expenses include the costs for commercial buses to move personnel around and between camps, high-capacity ice-making plants, wastewater treatment equipment, waste incinerators, and gymnasium equipment. CBO also added the costs to construct permanent or temporary facilities because the Army would probably need to undertake similar military construction projects when providing logistics services. In total, CBO added about $1.4 billion to the periodic costs of the 104 existing units over the 20-year period, or $700 million for each contingency operation.

CBO also included in its estimate of costs for existing Army units some $8.7 billion in recurring costs from KBR's estimate. Approximately 80 percent of those additional recurring costs were for food and food services. The remaining costs were for consumable supplies and labor services (such as groundskeeping and housecleaning).[7]

When CBO added KBR's costs to provide some logistics services, it removed the costs for Army personnel, equipment, and supplies normally used to perform that service organically. For example, the Army's force provider companies provide billeting, food services, showers and latrines, laundry services, and recreation facilities for deployed forces. According to Army documents, each of those units would have 435 soldiers if fully manned. However, they are routinely manned with as few as 35 enlisted soldiers, filling the remaining positions with U.S. civilians or foreign nationals during a deployment. CBO assumed that the Army would adopt KBR's methods of delivering the services that would normally be assigned to force provider companies and excluded from the cost estimate the additional personnel and equipment that a force provider company would need to perform those services. In other words, CBO assumed that the force provider companies would deploy with only 8 percent of their personnel and 20 percent of their equipment, and that KBR's costs would be a surrogate for the remaining U.S. civilians and foreign nationals. The contingency costs for the 10 force provider companies in the Army's logistics force would total $600 million per year if those companies were fully manned but only $100 million per year at the reduced strength assumed by CBO.

Transportation Costs. Using the number of personnel in each unit, the weight of equipment assigned to that unit, and the prices for moving personnel and equipment by air and sea in cost schedules published by the U.S. Transportation Command, CBO estimated costs to move each unit approximately 6,000 miles from the United States to Iraq. CBO assumed that all personnel and 20 percent of equipment would be sent to the theater by air and that the remaining equipment would be transported by sea to a port in Iraq and then transported by trucks or otherwise driven to the final destination in-country. CBO assumed

7. For all of the services specified in Task Order 59, CBO added a total of $18.7 billion to its estimate of Army costs over 20 years on the basis of costs estimated by KBR. Food and food services accounted for approximately $12 billion of this total.

that all personnel would return to the United States after one year but that the unit's equipment would remain behind for use by personnel deployed to replace them. CBO also assumed that after the fifth year of each contingency operation, all personnel and equipment would return to the United States. (Transportation costs in the fifth year would be less than estimated for this study if some equipment was left in the theater of operations, either as a donation to the host country or because the expense to transport it home would exceed its value.) Transportation costs for existing units would total $1.2 billion over the 20-year period, according to CBO's estimates.

Acquisition Costs for Additional Units. CBO estimates that the Army would need to man and equip 73 additional transportation, supply, medical, engineering, and other support units to perform the tasks required in the statement of work for Task Order 59 (see Table C-2).

Because the Army's budget includes funding only for those units that are currently in the force, all costs for new units would be incremental in this analysis. The cost to fill new units with the required personnel and equipment—estimated at $700 million—would be incurred once, at the time the units were created (see Table 3-4 on page 38).

Although the Army would probably need more than a year to acquire all of the equipment and to recruit and train all of the personnel needed to field those additional units, for this analysis CBO assumed that all of the additional units would be fielded in time to provide logistics services at the start of the 20-year scenario.

Personnel Acquisition Costs. CBO estimates that the cost to recruit and train new personnel to staff the additional units needed to provide logistics services would total $110 million and would be incurred in the first year of the 20-year period considered for this study. CBO assumed that the Army would recruit and train enough personnel to staff every position in the newly created units but that current Army personnel would be transferred from other assignments to staff the senior positions in the new units. Personnel in existing units would be promoted or transferred to fill out the vacancies in the upper ranks, and the new recruits would fill vacancies created at the lower echelons. CBO estimated recruiting costs using per capita costs derived from the Army's recruiting budget request for 2005. Training costs were calculated on the basis of the number of personnel assigned to each military occupational specialty (MOS) in a unit and the cost for basic training and for additional training needed to qualify personnel for their MOS. CBO derived other costs, such as those for recruits to travel from their homes to training centers and from their training base to their first duty station, using per capita costs provided by the Army.

Equipment Acquisition Costs. According to CBO's estimates, it would cost $590 million to purchase vehicles, weapons, communications equipment, and other support equipment; to provide clothing and individual equipment for each soldier; and to provide initial inventories of ammunition, spare parts, and supplies. CBO estimated the cost of unit equipment listed in each TOE using prices from Selected Acquisition Reports prepared by the Department of Defense, from Army supply and logistics publications, and from Army budget justification materials. Similarly, CBO used per capita and per-unit factors provided by the Army to estimate the cost of ammunition, spare parts, supplies, clothing, and equipment.

Routine Operations Costs for Additional Units. The Army's budget includes funding for the day-to-day operations of only those existing units that CBO believes could be assigned to provide most of the logistics services currently being furnished by Kellogg, Brown & Root. The routine operating expenses for additional units are thus incremental costs in this analysis. CBO estimates that the annual recurring costs of maintaining those additional units would total about $300 million per year, or $5.9 billion over 20 years (see Table 3-4 on page 38). Once fielded, those units would remain in the force structure, even when they were not deployed to contingency operations to provide logistics support. Therefore, their operating expenses would recur each year in this analysis.

Annual personnel costs ($3.9 billion over 20 years) would include all pay and allowances. CBO estimated those costs on the basis of the number of personnel authorized to each unit and data from Army pay tables. Costs would also include those that arose from recruiting and training new personnel to replace soldiers who transferred to other units or who separated from the service. The estimate of recruiting and training costs was determined on the basis of per capita factors similar to those that would be incurred to initially man a unit. Also considered was the frequency with which officers and enlisted personnel

Table C-2.

Additional Units Needed to Provide Logistics Services

Unit Type	Number of Units	Number of Troops
Command-and-Control Functions		
HHC Air Traffic Services Battalion	1	60
HHD Supply and Service Battalion	1	57
Logistics Functions		
Cargo Transfer Company	1	280
Combat Heavy Equipment Transport Company	1	299
Field Service Company	11	1,353
Firefighting Team	28	196
Force Provider Company	5	175
Medical Detachment (Blood support)	3	90
Medium Truck Company (40 ft.)	2	338
Petroleum Pipeline and Terminal Company	1	186
Prime Power Engineer Battalion	7	1,806
Repair Parts Team	2	108
Supply Company	5	625
Subsistence Platoon	5	285
All Functions		
Total	**73**	**5,858**

Source: Congressional Budget Office.

Note: HHC = headquarters and headquarters company; HHD = headquarters and headquarters detachment.

leave units as a result of either separation or rotation to new duty assignments.

Routine costs for training and for operating and maintaining unit equipment would include direct expenses for fuel, consumable supplies, repair parts, and ammunition. CBO estimated those costs using data from the OSMIS database. Other routine costs would include indirect expenses, such as base operations costs, facilities maintenance costs, utilities, civilian salaries, contracted services, administrative and overhead functions, and other logistics services. CBO estimated those costs using per capita cost factors developed by the Army for indirect expenses. Combined, those operation and maintenance costs would total $1.5 billion over 20 years, CBO estimates.

While equipment would be purchased for new units at the time they were created, over the subsequent 20 years the Army would need to replace that equipment on a periodic basis to ensure that the unit remained capable of performing its mission. On the basis of the same assumptions previously outlined for normal peacetime operations—assigning tracked vehicles a useful life of 30 years but trucks and other support equipment a life of only 20 years—CBO estimated it would cost $500 million over 20 years to replace equipment on a periodic basis.

Contingency Operations Costs for Additional Units. When participating in contingency operations, the additional units would incur incremental costs for personnel, personnel support, operating support, and transportation at the same rate that existing units would. Those costs would total $17.6 billion over 20 years (see Table 3-4 on page 38). Those costs would break down as follows:

- $3.0 billion for personnel;
- $400 million for personnel support;
- $12.8 billion for operating support, including $1.2 billion for periodic expenses and $7.4 billion in recurring expenses taken from KBR's cost estimate; and
- $1.4 billion for transportation.

Costs to Provide a Rotation Base

In addition to the units that the Army would need to provide its own logistics support, the Army would need to create enough units to regularly replace those deployed to the theater of operations if contingency operations continued beyond one year. According to CBO's estimates, in order for the Army to meet its deployment goal for active units and its mobilization goal for reserve units, it would need a rotation base of 875 units to keep 177 units continuously deployed in contingency operations—a total of 1,052 units in all. Because there are now only 81 units available to fill a portion of the rotation base, the Army would need to man and equip another 794 units to satisfy the requirement.

The Army is not currently meeting its rotation goals and is deploying many active-component units more frequently than once every three years. Some active units are being deployed as soon as one year after returning from their most recent deployment. If CBO assumed that the Army intended to deploy logistics support units as frequently as it now deploys other units, fewer units would be needed for the rotation base and costs would be less than estimated here. However, in estimating the number of units required for the rotation base, CBO assumed the Army would meet its minimum goals for deployment frequency.

Although the units in the rotation base would not incur the incremental costs associated with contingency operations, they would have routine operating costs for personnel and equipment. CBO estimated that the costs to recruit and train new personnel and acquire equipment, supplies, and ammunition for the 794 additional units needed for the rotation base would total $5 billion. Over 20 years, the costs of routine operations for the new units would total $30.7 billion (see Table 3-4). Those costs would break down as follows:

- $18.3 billion for personnel;
- $2.5 billion for training, operations, and maintenance;
- $6.3 billion for indirect costs; and
- $3.6 billion to replace equipment worn out as a result of normal wear and tear.

APPENDIX

D

Assessing the Sensitivity of Results to Certain Assumptions

Extrapolating Cost Factors from 10 Selected Sites

In the main text of this study, the Congressional Budget Office (CBO) estimated the cost of providing logistics support to deployed Army units using two different approaches—a private contractor hired under the Logistics Civil Augmentation Program (LOGCAP), or the Army's own logistics units. The current LOGCAP contractor, Kellogg, Brown & Root, provided CBO with summary cost data that capture its activities under LOGCAP Task Order 59 throughout the entire Iraqi theater, as well as a detailed breakdown of the estimated costs incurred at 10 particular sites within the theater. CBO used a weighted average of data from the 10 selected sites to estimate the values of two key cost factors used in the analysis: recurring costs as a percentage of total costs, and the percentage of contractor costs that should be added to the estimate of Army costs. CBO applied those weighted averages when estimating the total costs of having the Army perform the logistics functions specified in Task Order 59. If the work at those 10 sites is representative of the total costs of implementing Task Order 59, then extrapolation should produce a fairly accurate estimate of total costs. However, if the distribution of costs within various categories (such as equipment, facilities, labor, and food services) differs between the selected sites and the remaining sites, CBO's sample of sites may not be representative of all sites served under the task order. Therefore, costs for the work required under the task order as a whole could differ from those estimated here.

For the first cost factor, CBO estimated that recurring costs for the contractor accounted for 54 percent of total costs at the 10 selected sites, with nonrecurring costs accounting for the other 46 percent. If the Army provided services at those sites, CBO estimated, its costs would break down as 56 percent recurring costs and 44 percent nonrecurring costs.[1] For the second cost factor, CBO added an average of 48 percent of the contractor's costs at the 10 sites to the estimate of Army costs. Although those amounts were averages, the variation across the 10 sites suggested that, for the task order as a whole, recurring costs for both the contractor and the Army could be as high as 80 percent or as low as 40 percent of total costs, depending on which of the 10 sites is most representative of the whole. Similarly, the percentage of contractor costs that should be added to the Army estimate could be as high as 70 percent or as low as 35 percent.

Given estimates of the contractor's or the Army's costs at any one site, a reclassification of costs that increases recurring costs by 1 percentage point must necessarily decrease nonrecurring costs by 1 percentage point (because the total must remain at 100 percent). Looking across the 10 sites, however, the ones that would require a larger-than-average investment in nonrecurring costs by the contractor would typically still require a larger-than-average investment if the Army took over the logistics function. This positive correlation arises because the factors that necessitate a larger-than-average investment—such as a large troop population that must be supported at a site containing few existing habitable structures—would be the same regardless of which organization was responsible for providing the logistics support. Thus, in the sensitivity analysis, CBO assumes a common percentage of recurring costs for the contractor and the Army, although it varies that common factor in the range between 40 percent and 80 percent. CBO independently varied the

1. Because existing Army units would already possess much of the equipment they would need for the logistics mission, their nonrecurring costs would be slightly lower than those for the LOGCAP contractor.

Table D-1.

Alternative Assumptions for Key Cost Parameters

	Recurring Costs as a Percentage of Total Costs	Nonrecurring Costs as a Percentage of Total Costs	Army Additive Costs as a Percentage of Total Costs
Average Recurring Costs/Average Additive Costs	54/56[a]	46/44[b]	48
High Recurring Costs/Average Additive Costs	80	20	48
Low Recurring Costs/Average Additive Costs	40	60	48
Average Recurring Costs/High Additive Costs	54	46	70
Average Recurring Costs/Low Additive Costs	54	46	35
High Recurring Costs/High Additive Costs	80	20	70
Low Recurring Costs/High Additive Costs	40	60	70
High Recurring Costs/Low Additive Costs	80	20	35
Low Recurring Costs/Low Additive Costs	40	60	35

Source: Congressional Budget Office.

a. The contractor provided summary cost data that capture the activities under Logistics Civil Augmentation Program (LOGCAP) Task Order 59 throughout the entire Iraqi theater, as well as a detailed breakdown of the estimated costs incurred at 10 particular sites within the theater. For the 10 selected sites, recurring costs for the LOGCAP contractor were 54 percent of total costs. CBO estimated that recurring costs for the Army were 56 percent of total costs.

b. For the 10 selected sites, nonrecurring costs for the LOGCAP contractor were 46 percent of total costs. CBO estimated that nonrecurring costs for the Army were 44 percent of total costs.

percentage of contractor costs that should be added to the estimate of Army costs, in the range between 35 percent and 70 percent (see Table D-1). However, CBO observed that among the 10 sites, those with high recurring costs tended to also have a high percentage of contractor costs that should be added to the Army estimate. Thus, the eight sensitivity cases in Table D-1 are not all equally likely.

The results for most of the sensitivity cases were consistent with the results produced using the weighted averages for the 10 sites. In all of the alternative combinations, the total cost of using Army units, including the cost of units in the rotation base, was higher than the costs incurred under the LOGCAP contract. In five of the eight alternative cases, the direct cost (that is, excluding the rotation base) of providing logistics support with Army units was also greater than the cost of the LOGCAP contract (see Table D-2).

In only one case—when recurring costs were a high percentage of total costs, and the costs added to the Army were a low percentage of total costs—was the direct cost of providing logistics support using Army units significantly less than the cost of the LOGCAP contract. In that case, the Army's direct cost to provide logistics support would be $12.2 billion less than the cost of the LOGCAP contract, CBO estimated. However, in light of the positive correlation already noted between the percentage of recurring costs and the percentage of additive costs, this particular case is among the least likely. The implausibility of this case becomes apparent by considering that food and food services for supported Army units would be the single largest recurring cost and would also be fully additive to the Army costs. Thus, when recurring costs were high as a result of food and food services costs, additive costs for the Army would also be high—as distinct from this case.

CBO concluded that the overall result of this analysis—that total costs for acquiring logistics support from the LOGCAP contractor would be lower than the costs of providing those services using Army units—would be unlikely to change if the split between recurring and nonrecurring costs differed from the weighted average for the 10 sites. Nor would the result change if the percentage of Kellogg, Brown & Root's costs added to CBO's estimate for Army units differed from the weighted average.

Table D-2.

Sensitivity of Incremental Costs to Changes in Assumptions

(Billions of 2005 dollars)

	LOGCAP Costs	Army Costs to Provide Logistics Services	Total Army Costs, Including Rotation Base	Difference in Direct Costs[a]	Difference in Total Costs[b]
Average Recurring Costs/Average Additive Costs	41.4	42.7	78.4	1.3	37.0
High Recurring Costs/Average Additive Costs	53.7	48.1	83.8	-5.6	30.1
Low Recurring Costs/Average Additive Costs	34.7	38.9	74.6	4.2	39.9
Average Recurring Costs/High Additive Costs	41.4	51.0	86.8	9.6	45.4
Average Recurring Costs/Low Additive Costs	41.4	37.5	73.3	-3.9	31.9
High Recurring Costs/High Additive Costs	53.7	58.9	94.7	5.2	41.0
Low Recurring Costs/High Additive Costs	34.7	45.7	81.4	11.0	46.7
High Recurring Costs/Low Additive Costs	53.7	41.5	77.2	-12.2	23.5
Low Recurring Costs/Low Additive Costs	34.7	34.8	70.5	0.1	35.8

Source: Congressional Budget Office.

Note: LOGCAP = Logistics Civil Augmentation Program.

a. Direct costs are those to provide logistics services excluding incremental costs of the Army's rotation base.

b. Total costs are those to provide logistics services including the incremental costs of the Army's rotation base.

Providing Logistics Support Exclusively with Active Army Units

Another assumption that CBO used in its analysis was that the Army would deploy both active-component and reserve-component units to provide logistics support—as it does for current contingency operations. Alternatively, if the Army anticipated frequent and lengthy contingency operations in the future, it could decide to use only active-component units to provide that support. More new units would be required to perform the logistics functions—130 instead of 73—but fewer units would be needed for the rotation base because active units are assumed to be deployed for a much larger percentage of the time than are reserve units. The Army would need to maintain only 324 units for the rotation base, instead of the 875 required under the base case of this analysis. Acquisition costs would be lower because less equipment and fewer personnel would be required for the smaller number of active units, but routine operating costs for active units would be higher because those units spend more time training than reserve units do and because active-duty personnel are paid full time.

CBO estimates that over the 20-year period considered in this analysis, it would cost the Army about $1.1 billion less to use only active-component units to provide logistics services in contingency operations, compared with the cost of providing those services using a mix of active- and reserve-component units (see Table D-3). Onetime and periodic costs for an all-active-component force would be $2.3 billion less than for a mixed force. Recurring contingency costs would be $4.3 billion lower, but recurring routine costs would be $5.5 billion higher.

Table D-3.

Comparison of Incremental Costs Over 20 Years for Providing Logistics Support Using Only Active-Component Army Units

(Billions of 2005 dollars)

	Onetime[a] and Periodic Contingency Costs[b]	Recurring Contingency Costs[c]	Recurring Routine Costs[d]	20-Year Total
Logistics Support Provided by Army Units				
Costs to perform mission				
Mix of active and reserve units	3.2	33.6	5.9	42.7
All active-component units	3.4	29.3	11.1	43.8
Difference	0.2	-4.3	5.2	1.1
Costs to provide rotation base				
Mix of active and reserve units	5.0	n.a.	30.7	35.7
All active-component units	2.5	n.a.	31.1	33.6
Difference	-2.5	n.a.	0.3	-2.2
Total Difference	**-2.3**	**-4.3**	**5.5**	**-1.1**

Source: Congressional Budget Office.

Note: n.a. = not applicable.

a. Onetime costs include the hiring and training of personnel and the acquisition of equipment for additional Army units. Those costs would be incurred only in the first year, when the Army decided to provide logistics services in-house.

b. Periodic contingency costs occur in the first year of each contingency operation and include the costs to procure equipment and construct facilities needed specifically for that operation.

c. Recurring contingency costs for two five-year contingency periods.

d. Costs for 20 years of routine operations. For existing units, those costs would be included in the Army's peacetime budget and would not be incremental to bringing the logistics functions in-house. For new units, half of those costs would be incurred during contingency operations.

In this analysis, CBO assumed that the Army would spend 10 years out of the 20-year period deployed in contingency operations. If contingency operations took place for more than 10 years, savings from using only active-component units would be greater than $1.1 billion. CBO estimates that in the alternative scenario in which four consecutive five-year contingency operations occurred, providing logistics services only with active-component units would cost about $4 billion less over 20 years than using a combination of active- and reserve-component units.

APPENDIX

E

Routine Costs for Existing Army Units

The costs considered throughout this study are incremental budgetary costs—that is, the change in the Army's budget that would result from a decision to obtain logistics support using Army units rather than a Logistics Civil Augmentation Program (LOGCAP) contractor. The Army's current budget includes funding for the routine operating costs of existing units (such as pay for active-duty military personnel, peacetime training exercises, and regular equipment maintenance). Basic pay and peacetime allowances for active-duty personnel would already be funded if those units were deployed for contingency operations. However, additional funding would be required for types of special pay and allowances for which soldiers would qualify if deployed to a wartime theater—including hostile-fire pay and imminent-danger pay—and pay for reserve personnel called to active duty.

When units participate in contingency operations, they no longer need funds to pay for routine operations and maintenance activities. Thus, the funds budgeted for those activities become available to pay for a portion of the costs associated with the contingency operations. For existing units, the incremental costs in this study are the "above and beyond" costs—that is, the full costs of the operation, minus the costs of routine operations that are already funded in the Army's budget.

Those recurring routine costs are significant: for existing units assigned to provide logistics services, they would total $8.3 billion over 20 years (see Table E-1). During 10 of the 20 years in the Congressional Budget Office's (CBO's) base-case scenario, existing units would participate in contingency operations instead of routine peacetime operations. Thus, half of the budgeted $8.3 billion would not actually be spent on routine operations but could be diverted to pay a portion of the cost of contingency operations. In effect, $4.2 billion in budgeted costs could be used to partially pay for contingency operations that are not funded in the Army's peacetime budget. Existing units that would be part of the rotation base have routine costs of $6.3 billion over the 20-year period, but those costs would continue to accrue during either wartime or peacetime, so they would not be available to fund contingency operations.

If this analysis considered full costs rather than incremental costs, the Army's costs would exceed those of the contractor by a much larger margin. Even without a rotation base, the Army units providing logistics services would cost $9.6 billion more than the LOGCAP contractor over 20 years, compared with just $1.3 billion when only incremental costs are considered. Total costs for providing logistics support with Army units, including the full cost of the rotation base, would exceed the cost of the LOGCAP contractor by nearly $52 billion, compared with the incremental-cost estimate of $37 billion.

Evaluating the full cost of alternative approaches for providing logistics support is informative, but for policymaking, the analysis of incremental costs is more useful. Because routine operating costs for existing units would not change as a result of a decision to obtain logistics services from Army units, those costs should not be considered in the decisionmaking process. While those costs are not fixed—the Army could decide to eliminate those units to avoid their costs if military planners decided the units were no longer needed—CBO assumed that the decision to change current Army force structure would be independent from a decision on how to obtain logistics services. Because the Army is currently planning to increase the number of personnel on active duty even as it relies on the LOGCAP contract, CBO believes the Army would not change end strength as a result of any decision regarding the source of logistics support.

Table E-1.

Comparison of Total Costs Over 20 Years

(Billions of 2005 dollars)

	Onetime[a] and Periodic Contingency Costs[b]	Recurring Contingency Costs[c]	Recurring Routine Costs[d]	20-Year Total
Logistics Support Provided by LOGCAP Contractor	5.4	35.9	0.1	41.4
Logistics Support Provided by Army Units				
Costs to perform mission				
Existing units	1.4	17.1	8.3 [e]	26.8
New units	1.8	16.5	5.9	24.2
Subtotal, direct costs	3.2	33.6	14.2	51.0
Costs to provide rotation base				
Existing units	n.a.	n.a.	6.3 [e]	6.3
New units	5.0	n.a.	30.7	35.7
Subtotal, rotation base	5.0	n.a.	37.0	42.0
Total Army Costs	8.2	33.6	51.2	93.0
Difference in Direct Costs[f]	-2.2	-2.3	14.1	9.6
Difference in Total Costs[g]	**2.8**	**-2.3**	**51.1**	**51.6**

Source: Congressional Budget Office.

Note: LOGCAP = Logistics Civil Augmentation Program; n.a. = not applicable.

a. Onetime costs include the hiring and training of personnel and the acquisition of equipment for additional Army units. Those costs would be incurred only in the first year, when the Army decided to provide logistics services in-house.

b. Periodic contingency costs occur in the first year of each contingency operation and include the costs to procure equipment and construct facilities needed specifically for that operation.

c. Recurring contingency costs for two five-year contingency periods.

d. Costs for 20 years of routine operations. For existing units, those costs would be included in the Army's peacetime budget and would not be incremental to bringing the logistics functions in-house. For new units, half of those costs would be incurred during contingency operations.

e. Not included in the comparison of incremental costs shown in Table 3-5 on page 39.

f. Direct costs are those to provide logistics services excluding the incremental costs of the Army's rotation base.

g. Total costs are those to provide logistics services including the incremental costs of the Army's rotation base.

Glossary of Abbreviations

AMC: Army Materiel Command

BSC: Balkans Support Contract

C4ISR: command, control, communications, computers, intelligence, sensors, and reconnaissance

CENTCOM: U.S. Central Command

C.F.R.: Code of Federal Regulations

CINC: commander in chief

CLS: contractor logistics support

CS: combat support

CSS: combat service support

DBA: Defense Base Act

DMDC: Defense Manpower Data Center

DoD: Department of Defense

FORMIS: Forces, Readiness, and Manpower Information System

FRA: Forward Repair Activity (team)

GS: General Schedule

HHC: headquarters and headquarters company

HHD: headquarters and headquarters detachment

IDA: Institute for Defense Analyses

IILS: integrated logistics support

IRR: Individual Ready Reserve

KBR: Kellogg, Brown & Root

LOAC: laws of armed conflict

LOGCAP: Logistics Civil Augmentation Program

MoD: Ministry of Defense (British)

MOS: military occupational specialty

NSPS: National Security Personnel System

OEF: Operation Enduring Freedom (Afghanistan)

OIF: Operation Iraqi Freedom

OSMIS: Operating and Support Management Information System

PEO: program executive officer

PM: program manager

POM: Program Objective Memorandum

ROM: rough order of magnitude

SBCT: Stryker brigade combat team

SOFA: Status of Forces Agreement

SRC: Standard Requirements Code

TAA: Total Army Analysis

TDA: Table of Distribution and Allowances

TOE: Table of Organization and Equipment

TSA: Transportation Security Administration

TTHS: transients, trainees, holdees, and students

UCMJ: Uniform Code of Military Justice

USAREUR: United States Army Europe