

November 2008

# FORCE STRUCTURE

## The Army Needs a Results-Oriented Plan to Equip and Staff Modular Forces and a Thorough Assessment of Their Capabilities





Highlights of [GAO-09-131](#), a report to congressional committees

## Why GAO Did This Study

Amid ongoing operations in Iraq and Afghanistan, the Army embarked in 2004 on a plan to create a modular, brigade-based force that would be equally capable as its divisional predecessor in part because it would have advanced equipment and specialized personnel. GAO has previously reported that restructuring and rebuilding the Army will require billions of dollars for equipment and take years to complete. For this report, GAO assessed the extent to which the Army has (1) developed a plan to link funding with results and (2) evaluated its modular force designs. GAO analyzed Army equipment and personnel data, key Army reports, planning documents, performance metrics, testing plans, and funding requests. GAO also visited Army Training and Doctrine Command, including selected Army proponents and schools; Army Reserve Command; and the National Guard Bureau.

## What GAO Recommends

GAO recommends that the Army develop and report to Congress a results-oriented plan, that includes milestones that better links funding to results; complete a plan for developing doctrine for its modular forces; and better assess the effectiveness of modular forces with authorized levels of equipment and personnel. Because DOD's comments disagreed or were not fully responsive to these recommendations, GAO elevated them to Congress for consideration.

To view the full product, including the scope and methodology, click on [GAO-09-131](#). For more information, contact John Pendleton at (404) 679-1816 or [pendletonj@gao.gov](mailto:pendletonj@gao.gov).

## FORCE STRUCTURE

### The Army Needs a Results-Oriented Plan to Equip and Staff Modular Forces and a Thorough Assessment of Their Capabilities

#### What GAO Found

The Army will have established over 80 percent of its modular units by the end of 2008 but does not have a results-oriented plan with clear milestones in place to guide efforts to equip and staff those new units. The Army has been focused on equipping and staffing units to support ongoing operations in Iraq and Afghanistan; however, the equipment and personnel level of non-deployed units has been declining. The Army now anticipates that modular units will be equipped and staffed in 2019—more than a decade away—but has provided few details about what to expect in the interim. And while the Army projects that it will have enough equipment and personnel in the aggregate, its projections rely on uncertain assumptions related to restoring equipment used in current operations, as well as meeting recruiting and retention goals while simultaneously expanding the Army. Further, GAO's detailed analysis of Army data shows that the Army could face shortfalls of certain modern equipment. Such items are important because the success of the modular design rests in part on obtaining key enablers needed for modular units to function as planned, such as equipment to provide enhanced awareness of the battlefield. GAO has previously reported that the Army lacks a funding plan that includes interim measures for equipping and staffing the modular force, making it difficult to evaluate progress. Without a plan for equipment and staffing that links funding with results and provides milestones, the Army cannot assure decision makers when modular units will have the required equipment and staff in place to restore readiness. Finally, without this plan the Army risks cost growth and further timeline slippage in its efforts to transform to a more modular and capable force.

The Army uses several approaches in testing unit designs and capabilities, but these efforts have not yielded a comprehensive assessment of modular forces. Testing the force is intended to determine whether modular units are capable of performing missions across the full spectrum of conflict. The Army has focused its testing efforts on combat units conducting ongoing counterinsurgency operations. However, gaps in the Army's testing could affect its forces' ability to deliver needed capabilities. First, the Army has not fully assessed the effectiveness of its support units because the doctrine that would define how modular support units will train, be sustained, and support the fight has not been completed. This doctrine provides a benchmark to measure the effectiveness of support units. Further, the Army has not assigned a focal point the responsibility for integrating assessments across activities, such as equipping and training. Second, the Army tested the capability of modular designs primarily unconstrained by resources, not at the level of personnel and equipment that the Army plans to provide units. Lacking an analysis of the capabilities of the modular force at levels that it plans to have, the Army will not be in a position to realistically assess whether the capabilities that it is fielding can perform mission requirements.

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**Abbreviations**

ACE	Analysis and Control Element
DOD	Department of Defense
DOTMLPF	doctrine, organization, training, materiel, leadership, personnel, and facilities
TRADOC	Army's Training and Doctrine Command

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Washington, DC 20548

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### Congressional Committees

During a period of continuing high demand for military capability, the Army is undertaking a significant transformation of its organization and force structure as well as an expansion of its force by more than 74,200 military personnel. One major initiative of this transformation—referred to as Army modularity—is the redesign of units from a large division-based structure to a brigade-based structure. An important difference between the new modular brigade combat teams and the previous division-based brigades is an increased capability to operate independently enabled by embedded combat support functions such as military intelligence, reconnaissance, and logistics. Although somewhat smaller in size than the divisional brigades, the new modular brigades are envisioned to be just as capable because they will have different equipment—including key enablers<sup>1</sup> such as advanced communications and surveillance equipment—and a broad mix of personnel. Continuing operations in Iraq and Afghanistan led the Defense Department to expand the Army to help reduce the stress on the force and meet increasing strategic demands. This initiative, called Grow the Force, will increase equipment and personnel needs, and we have reported that the full costs to restructure and rebuild the Army are large but uncertain.<sup>2</sup>

The John Warner National Defense Authorization Act for Fiscal Year 2007<sup>3</sup> directed the Comptroller General to provide to congressional defense committees an annual assessment, among other things, of the Army's

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<sup>1</sup> In a 2004 study, the *Army's Task Force Modularity Integrated Analysis Report* identified a set of key enablers, including battle command, unmanned aerial vehicles, and intelligence-surveillance-reconnaissance capabilities that are required for modular brigade combat teams to function as planned.

<sup>2</sup> See prior GAO work: GAO, *Restructuring and Rebuilding the Army Will Cost Billions of Dollars for Equipment, but the Total Cost Is Uncertain*, [GAO-08-669T](#) (Washington, D.C.: Apr. 10, 2008); GAO, *Force Structure: Better Management Controls Are Needed to Oversee the Army's Modular Force and Expansion Initiatives and Improve Accountability for Results*, [GAO-08-145](#) (Washington, D.C.: Dec. 14, 2007); and GAO, *Force Structure: Need for Greater Transparency for the Army's Grow the Force Initiative Funding Plan*, [GAO-08-354R](#) (Washington, D.C.: Jan. 18, 2008).

<sup>3</sup> Pub. L. No. 109-364, § 323(d).

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progress equipping and staffing modular units in the active and reserve components, progress by the Army in conducting further testing and evaluation of the Army's modular unit designs, and the use of funds by the Army for equipping its modular units. In accordance with this mandate for fiscal year 2008, we provided a briefing to your offices in March 2008 on our preliminary observations. This report expands on the information reported in those briefings and addresses in more detail the extent to which the Army (1) has developed a comprehensive plan that links results to investments with defined milestones and (2) has tested and evaluated its modular force design.

To assess the Army's plan to guide its efforts to equip and staff the modular force, we analyzed relevant Army plans and reports to Congress for equipping and staffing the modular force. We developed in conjunction with the Army a means for analyzing key equipment and personnel enablers of the modular force. Based on our review of Army modularity studies and reports, we defined key enablers as those pieces of equipment or personnel that are required for the organization to function as planned, providing the modular design with equal or increased capabilities compared with the previous divisional structure in areas such as a unit's firepower, survivability, and intelligence-surveillance-reconnaissance. To develop a preliminary list of key equipment and personnel enablers, we reviewed key Army modularity reports and obtained official comments from the Department of the Army and Army Training and Doctrine Command (TRADOC), which is responsible for the design and evaluation of modular units.<sup>4</sup> We then submitted the preliminary list to the Headquarters, Department of the Army, for official input and held subsequent discussions with Army officials. Our identification and analysis of fifteen key equipment enablers compares total Army (active, National Guard, and Reserve) equipment authorizations and design requirements for the operating and institutional forces with total Army on-hand quantities in April 2007 with planned equipment deliveries and projected equipment on hand in fiscal year 2012. Our identification and analysis of nine key personnel enablers compares active Army personnel

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<sup>4</sup> We grouped key enablers into broad equipment and personnel categories that include more specific equipment items and military occupational specialties that are critical to the modular force design. For example, "tactical radios" is a key equipment enabler category that includes multiple variants of the Single Channel Ground and Airborne Radio System. Similarly, "signals" is a key personnel enabler category that includes two occupational specialties: nodal network operator/maintainer and satellite communication systems operator/maintainer.

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authorizations and design requirements for the operating and institutional forces with active Army on-hand personnel strength in April 2007 and projected personnel strength for fiscal year 2012 (see app. I for details on our analysis of key equipment and personnel enablers). The Army's fiscal-year 2007 to 2012 equipment and personnel plans were the most recent data available to us when we developed this analysis. The Army provided updated data on the status of the Army's equipment as compared to the design requirement as of June 29, 2008. We did not assess the reliability of this 2008 data. However, the 2008 data were generally consistent with the data we analyzed in 2007. To assess the extent to which the Army has tested and evaluated the design of the modular force, we examined TRADOC's modular force assessment process and plans to evaluate modular combat and combat support unit designs. Although we did not independently test the reliability of Army data electronically, we determined the data were sufficiently reliable for the purposes of this report based on discussions with Army officials about the data quality control procedures used to ensure the reliability of the relevant equipment and personnel databases. We conducted this performance audit from April 2007 to September 2008 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. The scope and methodology used in the report are described in more detail in appendix II.

We conducted this review as part of a continuing body of work related to the Army's transformation to the modular force. In December 2007, we reported that the Army is making progress establishing modular units in the active and reserve components but has not established sufficient management controls to provide accountability for results for establishing modular units and expanding the force.<sup>5</sup> In response to that report, the Secretary of Defense agreed with our recommendations to improve management controls and develop a comprehensive Army strategy and funding plan for staffing and equipping modular units. We also found that while the Army is evaluating lessons learned from its ongoing counterinsurgency operations, it lacks a comprehensive plan to determine whether fielded modular unit designs meet the Army's original goals for

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<sup>5</sup> [GAO-08-145](#).

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modular units across the full spectrum of conflict.<sup>6</sup> In January 2008, we reported that the Army did not develop a transparent and comprehensive funding plan for its estimated \$70.2 billion Grow the Force initiative that would allow decision makers to understand the full magnitude of the funds needed and weigh competing defense priorities.<sup>7</sup>

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## Results in Brief

The Army will have established 84 percent of its planned modular units by the end of 2008 although non-deployed units may not be fully equipped and staffed, and the Army continues to lack a plan to guide efforts to equip and staff new units that links funding with results and defines interim milestones. Our prior work has shown that successful transformation initiatives have a plan that links overall results with funding needs. The Army has been concentrating on providing units deploying to ongoing operations in Iraq and Afghanistan with specially trained personnel and the most modern equipment available. However, as military operations have continued, the equipment and personnel levels of non-deployed units have declined. The Army has extended its estimates of how long it will take to equip the modular force from 2011 to 2019, and the full costs have not been determined. The Army projects that it will have enough equipment and personnel in the aggregate by 2012, but it will continue to rely on older equipment to mitigate significant shortfalls in modern equipment. Moreover, the Army's projections depend on uncertain planning assumptions related to repairing equipment used in operations in Iraq and Afghanistan and recruiting and retaining personnel. According to a 2004 Army Task Force Modularity study, the success of the modular design rests in part upon the availability of key enablers, such as equipment to provide enhanced awareness of the battlefield. Despite our December 2007 recommendations to develop measures of progress, the Army continues to lack a results-oriented plan to equip and staff modular units that provides interim milestones against which to measure the Army's progress. For example, in its 2008 annual report to Congress on modularity and other equipment issues,<sup>8</sup> the Army did not provide detailed information—such as equipment available and planned investments

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<sup>6</sup> The full spectrum of conflict includes counter-insurgency, stability, and major combat operations.

<sup>7</sup> [GAO-08-354R](#).

<sup>8</sup> *Annual Report to Congress on the Progress of Army Modular Force Initiative, Reset, and Army Prepositioned Stocks*, February 27, 2008, issued pursuant to Pub. L. No. 109-364, § 323(c).



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compared to requirements—that would enable Congress to assess the Army’s progress in meeting its equipment needs. Section 323 of the John Warner Defense Authorization Act for Fiscal Year 2007 does not require the Army to submit detailed information in its annual report. However, until the Army assembles and provides sufficient detail to show how requirements, proposed investments, and planned procurements are linked, it will not be in the best position to demonstrate that it is making progress in delivering the modern equipment and specialized personnel capabilities envisioned in its modular force design. Because the Army has not provided the kind of results-oriented plan needed to enhance congressional oversight of the Army’s equipping and staffing plans, we are recommending that the Secretary of Defense direct the Secretary of the Army to develop and report to Congress, in conjunction with its annual report on the progress of the modular force, a results-oriented plan that provides a detailed assessment of the Army’s progress toward meeting overall personnel equipment requirements for the modular force by year and identifies any risks associated with equipment and personnel shortfalls.

The Army uses a variety of analytic approaches to evaluate its modular forces and update organizational designs, but these approaches have not yet represented a thorough assessment of the capabilities of modular units across the force. Specifically, the Army has not (1) completed the doctrine of how support units will operate or designated a focal point for ensuring that assessments are integrated or (2) assessed the modular force’s capabilities with the levels of equipment and personnel that the Army expects to provide. Methodically testing, exercising, and evaluating new concepts are established practices for entities that are undergoing significant organizational transformation. According to the Army, the utility of its modular design is being proven in current operations, and lessons learned from current operations have identified changes that have made units more capable. However, while the Army has placed priority on developing the doctrine that defines how combat units will train, be sustained, and fight, it has not completed developing doctrine for how modular support forces will operate or designated an organization focal point to lead an integrated assessment of their capabilities. Until the doctrine is completed and a focal point is established to integrate assessments of areas that affect their capabilities, the Army will not have assurance that its support forces will have the capabilities they require. In addition, the Army projects that it will face significant shortfalls of selected modern equipment and personnel in some modular units that could result in less capability than envisioned by the modular force design. Lacking a comprehensive analysis of the capabilities of the modular force

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at authorized levels, the Army will not be in the best position to prioritize investments to maximize the capabilities that it is fielding across the Army. We are recommending that the Army complete the development of doctrine for modular support forces, establish a focal point for integrating assessments of support forces capabilities, and assess the effectiveness of modular forces with the authorized levels of equipment and personnel.

In reviewing a draft of this report, DOD disagreed with one recommendation, agreed with two recommendations, and partially agreed with one recommendation. DOD disagreed with our recommendation that it develop and report to Congress a results-oriented plan that links investments with expected results and provides interim milestones. DOD stated that modularity is a strategy for having interchangeable units to support operations, not a program for equipping, manning, or modernizing the force that requires a plan separate from the Army's overall equipping and manning plans. However, although DOD has processes for equipping, manning, and modernizing the force, these plans are not clearly linked in a way that demonstrates the results of investment decisions made through these processes. Without a plan that details how investments will be linked to improvements in readiness and the goals and milestones against which progress may be assessed, DOD leaders and congressional decision makers will not have complete information with which to make informed investment decisions. DOD agreed with our recommendations that it complete doctrine for modular support forces and appoint a focal point for ensuring that support units' requirements for doctrine, organization, training, materiel, leadership, personnel, and facilities are integrated, and DOD cited in its written comments some actions it has taken to provide doctrine and appoint a focal point for integration of activities across these domains. However, the actions DOD cited in its comments do not meet the intent of the recommendations, and the department did not specify any additional actions that it intends to implement the recommendations. We continue to believe that by implementing these recommendations, DOD could improve the operation of its modular support forces. DOD partially agreed with our recommendation to assess the capabilities of modular forces across the full spectrum of possible missions and with authorized levels of personnel and equipment, stating that the Army is currently assessing modular force capabilities and additional direction is not required. As the report discusses, we believe that assessing whether modular forces are capable of fulfilling the range of missions they may be called upon to undertake is important and that until the Army begins to test units with realistic personnel and equipment levels and across the full spectrum of conflict, the Army faces risks associated with shortfalls of key equipment should a different type of capability be needed in future

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operations in a different kind of conflict. Because DOD did not specify in its written comments actions that it will take to address three of our recommendations, we have elevated these as matters for congressional consideration, suggesting that Congress consider requiring the Army to provide in its annual report on modularity more detailed information on equipping plans, status of doctrine for support forces, and testing of modular forces with equipment and personnel levels that can realistically be expected in the near future. DOD's comments and our evaluation are discussed in detail in the Agency Comments and Our Evaluation section of this report.

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## Background

The Army's modular restructuring initiative began in 2004 as part of the overall transformation of the Army and was informed by earlier Army studies, such as the Striker Brigade Combat Team effort. The foundation of the modular force is the modular brigade combat team. A primary goal of the restructuring was to increase the number of available brigade combat teams to meet operational requirements while maintaining combat effectiveness that is equal to or better than previous division brigades. Modular combat brigades have one of three standard designs—heavy brigade, infantry brigade, or Stryker brigade. In addition, combat support and combat service support formations have a common design that can be tailored to meet varied demands of the combatant commanders. As opposed to the Army's legacy units, the standardized modular unit designs are being implemented in the National Guard and Army Reserves with the same organizational structure, equipment, and personnel requirements as active duty units. The Army plans to have reconfigured its total force—to include active and reserve components—into the modular design.

With the assistance of the Army, GAO identified the types of personnel and equipment that will enable the brigade-based modular force to be as capable as its predecessor, the division-based force. These key equipment enablers are classified by category, such as tactical radios. Within each category we identified the different equipment items that provide that capability; for example, in the tactical radio category, there are 317 different types of equipment (see table 1).

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**Table 1: Key Equipment Enablers Identified by GAO**

<b>Key equipment enablers by category</b>	<b>Description of equipment capabilities</b>	<b>Number of different types of equipment items in each category</b>
All-source Analysis System	Provides battlefield commanders with enhanced situational awareness and intelligence on enemy forces.	4
Analysis and control element	Furnishes higher-level commanders with intelligence processing, analysis, and dissemination capability.	8
Battle command systems	Enhances the commander's information-gathering and decision-making capability.	95
Fire support sensor system	Designates targets to enable ground and air delivered precision-strike capability.	6
Firefinder radar	Detects the location of mortars, artillery, and short and long-range rockets through the use of radar.	6
Joint network node	Provides high-speed, high-capacity tactical communications down to battalion level.	8
Long range advanced scout surveillance	Affords long-range target acquisition capabilities to armor and infantry scouts enabling them to conduct reconnaissance and surveillance operations.	3
Radios – high frequency	Provides commanders with radios that provide beyond the line-of-sight voice and data capability.	17
Radios – tactical	Allows higher-level units to command and maintain contact with lower-level units.	317
Tactical wheeled vehicles – light	Provides multipurpose transportation using light, mobile four-wheel drive vehicles.	43
Tactical wheeled vehicles – medium	Provides multipurpose transportation using medium trucks.	176
Tactical wheeled vehicles – heavy	Provides multipurpose transportation using heavy trucks.	106
Trojan spirit	Furnishes high-capacity, secure satellite communications services to tactical Army units.	14

<b>Key equipment enablers by category</b>	<b>Description of equipment capabilities</b>	<b>Number of different types of equipment items in each category</b>
Unmanned aerial vehicle – Prophet	Allows an all-weather, near-real-time view of an area of responsibility through the use of signals and intelligence sensors.	8
Unmanned aerial vehicle – small	Provides reconnaissance, surveillance, and target acquisition capabilities to ground commanders.	51

Source: GAO analysis of Army data.

We also classified key personnel enablers by category, such as psychological operations, and within each category we examined specific types of officer and enlisted skills. For example, within the psychological operations category we identified psychological operations officers and enlisted psychological operations specialists as key personnel enablers of the modular force (see table 2).

**Table 2: Key Personnel Enablers Identified by GAO**

<b>Key personnel enablers by category</b>	<b>Description of officers and enlisted personnel skills in each category</b>
Ammunition	Manage and maintain armament, missile and electronic systems, conventional and nuclear munitions and warheads; and the detection, identification, rendering safe, recovery, or destruction of hazardous munitions.
Armor	Direct, operate, and employ tanks, armored vehicles, support infantry and related equipment.
Civil affairs	Support the commander's relationship with civil authorities, the local populace, non-governmental organizations and international organizations.
Communication and information systems operation/Signal Corps	Manage all facets of Army and designated Department of Defense automated, electronic, and communication assets. More specifically, Signal Corps personnel are involved in the planning, design, engineering, operations, logistics and evaluation of information systems and networks.
Field artillery	Provide fire support to Army units through the employment of field artillery systems. These personnel control, direct and perform technical firing operations, and coordinate the efforts of multiple fire support assets.
Mechanical maintenance	Perform repair functions on Army weapons systems and equipment that support maneuver forces in their preparation for and conduct of operations across the entire operational spectrum.

Key personnel enablers by category	Description of officers and enlisted personnel skills in each category
Military intelligence	Provide commanders with all-source intelligence assessments and estimates at the tactical, operations, and strategic levels dealing with enemy capabilities, intentions, vulnerabilities, effects of terrain and weather on operations, and predicts enemy courses of action.
Psychological operations	Plan, conduct, and evaluate operations that convey selected information and indicators to foreign audiences to influence their emotions, motives, objective reasoning, and ultimately the behavior of foreign governments, organizations, groups and individuals throughout the entire spectrum of conflict.
Transportation	Manage all facets of transportation including the planning, operating, coordination and evaluation of all methods of transportation.

Source: GAO analysis of Army data.

As part of the redesign of the modular force, the Army is developing unit blueprints that identify design requirements for equipment and personnel. The design requirement, also known as the Objective Table of Organization and Equipment or objective requirement, represents the Army's goal of a fully modernized level of equipment and staffing for each type of modular unit and is unconstrained by resources. Because the Army's design requirements represent a future objective that is continually updated and refined over time, the Army establishes an interim requirement, known as the Modified Table of Organization and Equipment, and authorizes equipment and personnel levels across the Army based on its current inventory of equipment and personnel, planned procurement timelines, and anticipated funding. The Army expects to use this modified list of equipment and personnel for the foreseeable future to guide the conversion of existing divisions to modular brigades. In sum, the design requirement is the level that the Army would like each unit to have in the long-term, whereas the authorized level is what the Army can afford in the interim.

The Army also considered DOD's strategic plan as it restructured to a brigade-based force. For example, the Army's Brigade Combat Team designs were intended to be effective across the full spectrum of conflict, including global war, major theater war, smaller scale contingencies, insurgency/counter-insurgencies, and stability and support operations. Full spectrum of conflict includes a span of threats ranging from low intensity conflict, where the major threats are from ambush and skirmishes carried out by insurgents, to high-intensity conflict, where an enemy operates large numbers of armored vehicles and advanced weapons. DOD's most recent strategic plan, the *2006 Quadrennial*

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*Defense Review*, now refers to Army combat power in terms of brigade combat teams rather than number of divisions, consistent with the Army's new structure. In addition, the Army will create a number of different types of modular support units, and multifunctional and functional support brigades, which will provide, for example, intelligence, logistics, communications, and other types of important support capability to brigade combat teams.

The Army has traditionally evaluated units' designs and capabilities, such as support units and support capability, across a number of domains or areas: doctrine, organization, training, materiel, leadership, personnel, and facilities (DOTMLPF). Doctrine describes how DOD fights, trains, and sustains its forces and is generally the starting point for assessing capabilities. Organization refers to the design of units—how many and what types of personnel and materiel (equipment) a unit needs to provide a specific capability. Training, materiel, leadership, personnel, and facilities are also important components in building and sustaining capabilities. By looking across the domains, the Army can evaluate how proposed changes in one area can affect other areas and the units' overall capability. For example, the Army may evaluate the effect of adding more or different types of materiel or equipment on the capability of a unit to determine whether such changes would require changes in a unit's doctrine, organization, or training requirements. TRADOC is responsible for developing designs of modular units and evaluating whether modular combat and support units will be capable of successfully conducting operations across the full spectrum of conflict. Other organizations within the Army have responsibilities for personnel, equipment, and facilities that are also critical to building and maintaining the modular force.

The Secretary of Defense announced an initiative in January 2007—referred to as the Grow the Force initiative—to expand the size of the Army by about 74,200 military personnel to meet increasing strategic demands and to help reduce stress on the force. This planned expansion includes building six additional active modular brigade combat teams and additional modular support units, which will require a substantial increase in funding for personnel, equipment, and infrastructure. In January 2007, the Army estimated this expansion may require about \$70.2 billion in increased funding initially and a significant amount in annual funding to sustain the expanded Army.

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## The Army Has Made Progress Establishing Modular Units but Does Not Have a Plan That Links Funding and Results to Guide Its Efforts to Equip and Staff the Modular Force

The Army is making progress establishing modular units, but does not have a transparent results-oriented plan with clear milestones to guide efforts to fully equip and staff the modular force. Although the Army has extended the timeline from 2011 to 2019 for fully equipping the modular force, it has not identified the total cost needed to achieve its revised equipping goal. Our prior work has shown that successful transformation initiatives have a plan that links overall results with funding needs. While the Army projects that it will make progress toward its authorized equipment and staffing goals, it is likely to face some significant shortfalls by 2012 of modern equipment that is required for the modular force to operate as originally designed. Further, the Army's equipment and personnel plans depend on some assumptions related to rehabilitating equipment used in operations in Iraq and Afghanistan and related to recruitment and retention that may be uncertain, given the current pace of operations. According to a key 2004 Army Task Force Modularity study, the success of modular design rests in part on the availability of key enablers that are required for modular brigade combat teams to function as planned.<sup>9</sup> Without providing a detailed plan for equipment and staffing that links funding with results, the congressional decision makers will not have information to track the Army's progress toward equipping and staffing its forces.

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## The Army Is Making Progress Restructuring the Modular Force but Is Forming Units with Shortages in Equipment and Personnel

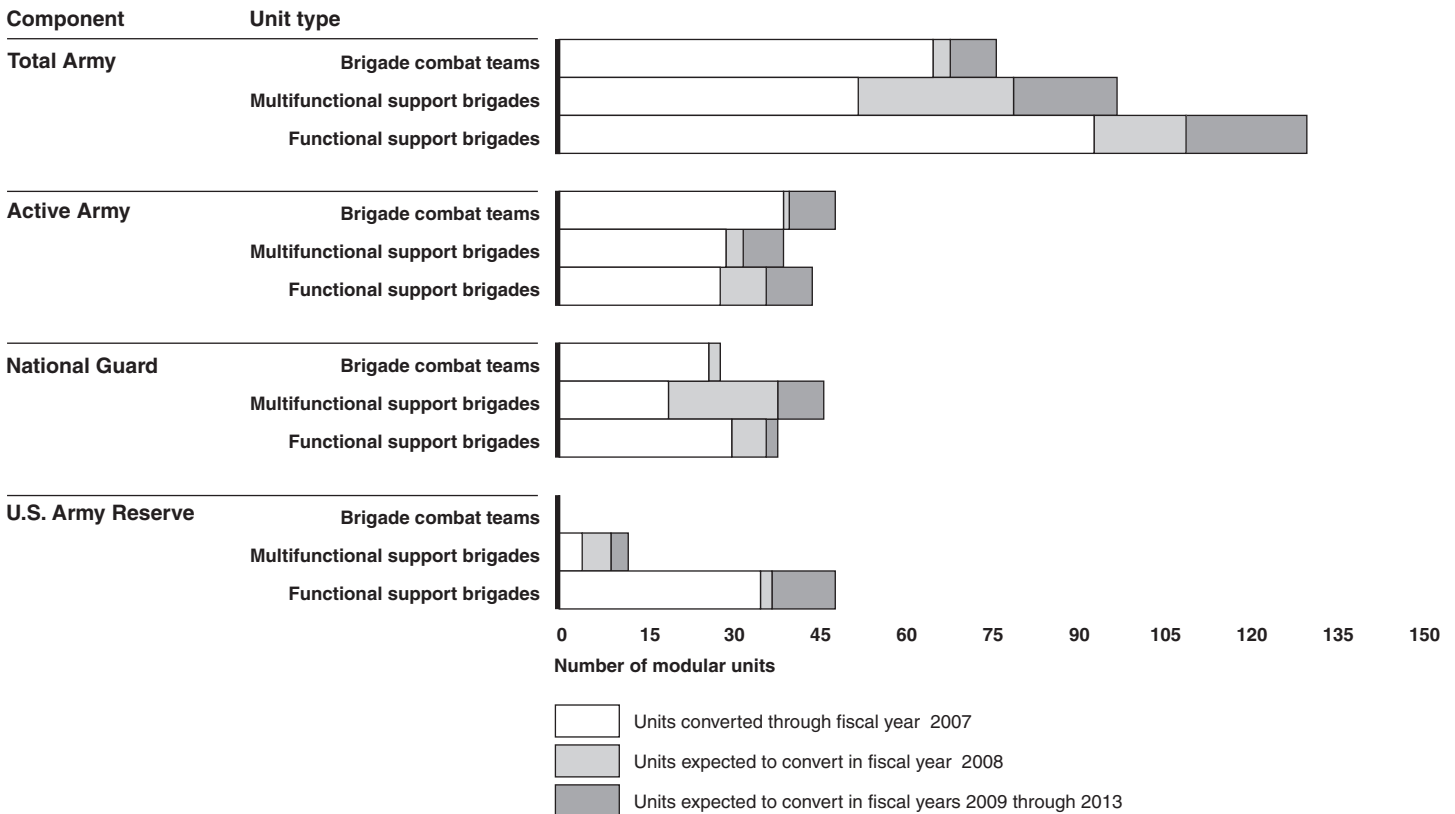
The Army is making progress establishing modular units. In accordance with Army strategy, including its expansion plans, the Army plans to have converted 256 of 303 (84 percent) modular combat and support units through the end of fiscal year 2008. Figure 1 shows the status of the conversions for active, reserve, and National Guard combat and support brigades.

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<sup>9</sup> Based on our review of key Army modularity reports and input from the Department of the Army, we defined key enablers as those pieces of equipment or personnel that are required for the organization to function as planned and that provide the modular design with equal or increased capabilities—such as a unit's firepower, survivability, and intelligence-surveillance-reconnaissance—compared with the previous divisional structure.



**Figure 1: Actual and Planned Army Modular Unit Restructuring Including the Army's Expansion Plan, March 2008**



Source: United States Army.

Note: The Army will convert two additional units in the National Guard to brigade combat teams in fiscal year 2008. However, one of the brigade combat teams will be redesignated as a maneuver enhancement brigade in fiscal year 2008 and the other as a battlefield surveillance brigade in fiscal year 2010.

As we reported in December 2007,<sup>10</sup> however, modular units are being established with shortfalls of some equipment and personnel. To meet operational needs, the Army has allocated available equipment and personnel to deployed and next-to-deploy units. As a result, although the Army is converting units to modular unit designs, nondeployed units do not have all the equipment or personnel needed for the new combat and

<sup>10</sup> GAO-08-145.

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support brigades. Using a combination of regular and supplemental appropriations, the Army has spent billions of dollars procuring and repairing equipment in recent years. However, equipping deployed and deploying forces has been the priority, and the amount of equipment left for non-deployed forces has declined. In February 2008, the Chief of Staff of the Army testified before the Senate Armed Services Committee that the Army's readiness is being consumed as fast as it can be built. The Army has announced a plan to restore balance to the force by 2011, but it has not detailed how it will achieve its goals of sustaining the force, preparing for missions, resetting equipment, and transforming for the future.

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## The Army Has Not Linked Planned Investments with Interim Milestones

The Army has extended its estimate for when it can fully equip the modular force from 2011 to 2019, but it still has not identified the total cost or established interim milestones toward reaching its revised equipping goal. Our prior work has shown that successful transformation initiatives have a clear plan with interim milestones that links overall results with funding needs.<sup>11</sup> In our December 2007, report we recommended that the Army develop a comprehensive strategy and funding plan as well as measures of progress for equipping and staffing the modular force.<sup>12</sup> We also recommended that the Secretary of the Army report this information to Congress to assist in its oversight of Army plans. Even though the Army agreed with our recommendations, it has not yet developed the comprehensive strategy or measures of progress needed to enable congressional oversight.

The Army's current investment plan is depicted in its 5-year defense plan, known as the future years defense program. However, this plan does not provide details about the Army's equipping and staffing plans to reach goals that stretch until 2019. When developing its personnel or equipment plans, the Army must consider a number of factors. First, the Army gives priority to meeting the needs of deployed forces, and these requirements depend on dynamic operational conditions. For example, the surge of forces into Iraq in 2007 required the Army to equip and staff additional

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<sup>11</sup> GAO, *Results-Oriented Cultures: Implementation Steps to Assist Mergers and Organizational Transformations*, GAO-03-669 (Washington, D.C.: July 2, 2003) and *Defense Transformation: Clear Leadership, Accountability, and Management Tools Are Needed to Enhance DOD's Efforts to Transform Military Capabilities*, GAO-05-70 (Washington, D.C.: Dec. 17, 2004).

<sup>12</sup> GAO-08-145.

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units quickly. Second, the Army must consider the wear and tear of ongoing operations on its equipment and make assumptions about how much equipment currently in use can be repaired. Third, the Army must determine how much equipment to buy to replace worn-out equipment and modernize the force. Finally, the Army has to decide how to distribute equipment and personnel across its remaining units within acceptable levels of risk.

Army officials told us that they use internal tracking systems to plan procurements of equipment and assess projected levels against requirements; however, visibility outside the Army over the progress in equipping and staffing the force is limited. The Army has not provided congressional decision makers with this detailed information. The John Warner National Defense Authorization Act for Fiscal Year 2007 (hereafter Public Law 109-364) requires the Secretary of the Army to include in a report submitted annually with the President's budget, among other things, an assessment of the progress made during that fiscal year toward meeting the overall requirements of the funding priorities for equipment related to the modularity initiative as well as the requirements for repair and recapitalization of equipment used in the Global War on Terrorism, and reconstitution of equipment in prepositioned stocks.<sup>13</sup> In its fiscal year 2008 report, the Army submitted a list of requested fiscal year-2009-funding amounts for selected equipment. However, the Army did not provide comprehensive information that is necessary to determine the progress it is making in equipping modular forces. Specifically, the Army's report did not include: (1) planned annual investments in acquisition and reset for equipment beyond fiscal year 2009 and quantities that it expects to procure or repair, (2) annual target levels for equipment and personnel, (3) key assumptions underlying the Army's plans, or (4) an assessment of interim progress toward meeting overall Army requirements and the impacts of shortfalls. While Public Law 109-364 does not expressly delineate the level of detail the Army should submit in the progress assessment included in its annual report, unless DOD provides information that links requirements, funding requests, and planned procurements, Congress may not have the best information on which to base funding decisions.

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<sup>13</sup> *Annual Report to Congress on the Progress of Army Modular Force Initiative, Reset, and Army Prepositioned Stocks*, issued pursuant to Pub. L. No. 109-364, § 323(c)(4).

**Army Projects That It Will Meet Overall Equipment and Personnel Requirements but Faces Challenges in Meeting These Goals**

The Army’s equipping and staffing projections indicate that the Army will have enough equipment and personnel to meet aggregate equipping and staffing requirements by 2012. However, our analysis of the Army’s projections showed some potential shortfalls of modern equipment, and its projections are based partly on the continued use of some older equipment. For example, the Army projects that it will exceed its authorized level of medium tactical vehicles by fiscal year 2012, but its projections include continued use of more than 12,500 obsolete two-and-one-half-ton medium trucks that are not deployable overseas.<sup>14</sup> As table 3 shows, our analysis of Army data found that when older equipment is excluded, shortfalls are projected in selected types of modern equipment within the key equipment categories. For example, our analysis showed significant shortages projected for three systems that make up the tactical internet: the Enhanced Position Location Reporting System and the Single Channel Ground and Airborne Radio System.<sup>15</sup> According to the 2004 Task Force Modularity study, the full benefits of networking may not be realized if only some elements of the force have the capability. Appendix I contains a more complete discussion of our analysis, and findings.

**Table 3: Projected Availability of Selected Key Modern Equipment Compared to the Authorized Level in Fiscal Year 2012**

<b>Key Enabler Category (Specific equipment items)</b>	<b>Percentage of authorized equipment projected to be available<sup>a</sup></b>
Radios – Tactical <ul style="list-style-type: none"> <li>• Single channel ground and airborne system;</li> <li>• Enhanced position location reporting system;</li> <li>• Rescue radio;</li> <li>• Squad radio.</li> </ul>	67
Tactical wheeled vehicles – light <ul style="list-style-type: none"> <li>• High mobility multipurpose wheeled vehicle</li> </ul>	52
Tactical wheeled vehicles – medium <ul style="list-style-type: none"> <li>• Medium trucks</li> </ul>	46

Source: GAO analysis of Army data.

<sup>14</sup> These assets are included in the equipment available total in 2007 and the projected equipment total in 2012.

<sup>15</sup> We have recently reported that between 2003 and 2007 the Army procured more than 240,000 Single Channel Ground and Airborne Radio Systems than it had planned to meet the requirements of current operation using mostly supplemental funds. See GAO, *Defense Acquisition: Department of Defense Needs Framework for Balancing Investments in Tactical Radios*, GAO-08-877 (Washington, D.C.: Aug. 15, 2008).

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Note: We did not analyze the Army's ability to provide equipment to units either deploying, about to be deployed, or returning from current operations. For the purpose of this table, our analysis excluded equipment items that the Army authorizes as substitutes because we assessed the Army's progress obtaining modern equipment items. Data retrieved from Army databases reflect equipment levels as of April 23, 2007.

<sup>a</sup>The types of authorized equipment represented here are some of the top equipment we identified as part of our study. For example, there were 7 kinds of tactical radios and 2 types of light and 2 kinds of medium tactical vehicles in the top 15 shortfalls. In the tactical radio and medium and light truck categories, we used generic descriptions to describe several related systems. For example, the tactical radios category includes four different types of Single Channel Ground and Airborne System radios.

The Army's projections of when it will be able to fully equip and staff the modular force are based on assumptions that will affect the actual equipment and personnel available. Expanding the size of the Army, rehabilitating equipment that has experienced wear and tear from overseas operations, recruiting and retaining personnel, and competition for increasingly scarce resources, each presents the Army challenges in planning and implementation as described below.

- Expanding the Army: The Army's planned expansion includes building six additional active modular brigade combat teams and additional modular support brigades within its increased end strength of 74,200.<sup>16</sup> Our prior work on recruiting and retention as well as equipping modular units have identified some potential difficulties that could arise in implementing an increase in the size of the Army at a time when the services are supporting ongoing operations in Iraq and Afghanistan.<sup>17</sup> For example, our prior work has identified shortages in mid-level officers for a larger force.
- Repair and restore deployed equipment: Equipment is currently experiencing significant wear and tear in overseas operations, reducing the equipment's expected service life. It is uncertain whether it is economically feasible to repair and restore equipment that has been deployed overseas, also known as equipment reset, to preserve its service

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<sup>16</sup> The Army had not fully identified the types of units it intended to build as part of the Grow the Force initiative at the time the equipment and personnel data were retrieved. As a result, the additional equipment and personnel requirements were not included in Army databases.

<sup>17</sup> GAO, *Military Personnel: DOD Needs to Provide a Better Link Between Its Defense Strategy and Military Personnel Requirements*, [GAO-07-397T](#) (Washington, D.C.: Jan. 30, 2007).

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life.<sup>18</sup> An Army procurement official confirmed that the Army's equipment projections rest on some uncertain assumptions related to the ability to reset the force.

- Recruiting and retention of personnel: While the services have generally met their recruiting and retention goals, several factors suggest that challenges for recruitment and retention are likely to continue. For instance, the Chairman of the Joint Chiefs of Staff testified in February 2008 before the Senate Armed Services Committee that recruiters have difficulty meeting their accession goals because of a decline in the willingness of persons in a position of influence to encourage potential recruits to enlist during a time of war. Another factor that DOD has reported contributing to the Army's recruiting challenges is that more than half of today's youth between the ages of 16 and 21 are not qualified to serve in the military because they fail to meet the military's entry standards.<sup>19</sup> Further, the Army has experienced decreased retention among officers early in their careers and shortages within certain specialty areas such as military intelligence<sup>20</sup> (see app. I for a detailed analysis of the Army's projections for specific personnel that are critical to the modular force).
- Availability of personnel: A growing number of Army personnel are unavailable for assignment because they are in training or are students, are transiting between positions, or are in a "holding facility" due to medical, disciplinary, or pre-separation reasons. Historically, about 13 percent of the Army's end-strength has been unavailable.<sup>21</sup> However, the number of service members who are unavailable now is likely to be greater because

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<sup>18</sup> Army equipment undergoing reset is included in the Army's projections of available equipment on hand through fiscal year 2012. Further information related to Army reset challenges can be found in GAO, *Defense Logistics: Army and Marine Corps Cannot Be Assured That Equipment Strategies Will Sustain Equipment Availability While Meeting Ongoing Operational Requirements*, [GAO-07-814](#) (Washington, D.C.: Sept. 19, 2007); and GAO, *Defense Logistics: Preliminary Observations on the Army's Implementation of its Equipment Reset Strategies*, [GAO-07-439R](#) (Washington, D.C.: Jan. 31, 2007).

<sup>19</sup> GAO, *Military Personnel: DOD Needs Plan to Address Enlisted Personnel Recruitment and Retention Challenges*, [GAO-06-134](#) (Washington, D.C.: Nov. 17, 2005).

<sup>20</sup> GAO, *Military Personnel: Strategic Plan Needed to Address Army's Emerging Accession and Retention Challenges*, [GAO-07-224](#) (Washington, D.C.: Jan. 19, 2007).

<sup>21</sup> The endstrength of the Army is composed of uniformed personnel in its operational or warfighting units, those assigned to infrastructure organizations, and personnel who are in training or hospitals and are unavailable for assignment to either operating forces or to meet infrastructure needs.

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the number of personnel unavailable due to war wounds has increased over the past several years.<sup>22</sup>

- **Availability of Funding:** The Army's ability to execute its equipment and personnel plans rests on several assumptions related to future costs and available funding. DOD has relied on a combination of regular appropriations and supplemental funding to finance the transition to modularity. How long supplemental funding will be available for this purpose is unclear. We have previously reported that DOD tends to understate future costs in its equipment plans by employing overly optimistic planning assumptions in its budget formulations.<sup>23</sup> A growing governmentwide fiscal imbalance could limit growth in defense funding and force choices among competing defense priorities, and rising costs for acquisition programs could require DOD to reassess the types and quantities of equipment it procures in the future.<sup>24</sup> A senior Army official in the Office of the Deputy Chief of Staff for Programs stated that significant increases in costs to procure equipment required for current operations, such as armored vehicles, represents another factor that may lead the Army to procure less equipment than expected. Moreover, personnel costs are rising dramatically, and as the costs for military pay and benefits grow, questions arise whether DOD has the right pay and compensation strategies to cost-effectively sustain the total force in the future.<sup>25</sup>

While Congress has provided substantial funding in response to DOD requests, our analysis has shown the Army has not adequately demonstrated to Congress how it intends to invest future funding to procure the modern equipment and provide staff with critical skills that will enable modular units to operate most effectively and when it can expect all modular units to have the equipment and personnel they are authorized. Decision makers may not be fully informed of the Army's equipment status because the Army has not developed a comprehensive equipment and personnel plan that details the equipment the Army has in its inventories as compared with the equipment required for units to

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<sup>22</sup> The Army has created special Warrior Transition Units to provide assistance to wounded warriors.

<sup>23</sup> GAO, *Future Years Defense Program: Actions Needed to Improve Transparency of DOD's Projected Resource Needs*, [GAO-04-514](#) (Washington, D.C.: May 7, 2004).

<sup>24</sup> GAO, *Defense Acquisitions: Assessments of Selected Weapon Programs*, [GAO-08-467SP](#) (Washington, D.C.: Mar. 31, 2008).

<sup>25</sup> GAO, *21<sup>st</sup> Century Challenges: Reexamining the Base of the Federal Government*, [GAO-05-325SP](#) (Washington, D.C.: Feb. 1, 2005).

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operate effectively in their modular designs and that sets milestones against which to measure the Army's progress equipping and staffing the modular force with key enablers.

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## The Army Has Not Fully Evaluated the Capabilities of the Modular Force across the Full Spectrum of Conflict

The Army uses a variety of approaches in testing unit designs and capabilities, but these efforts have not yielded a comprehensive evaluation of modular forces. Testing the modular force is intended to determine whether modular units are capable of performing potential missions across the full spectrum of conflict—and therefore needs to be as realistic as possible. Gaps in the Army's testing of the modular support forces and lack of a focal point for ensuring thorough testing of these forces could result in less capable support forces than planned. First, the Army has not fully assessed the effectiveness of its support units because it has not completed the doctrine that would define how modular support units will train, be sustained, and support the fight. Without this underpinning doctrine, the Army does not have a basic framework upon which to develop measures to assess the effectiveness of support units. Second, the Army has been testing the capability of modular forces primarily at unconstrained design levels, not the authorized level of personnel and equipment units that the Army actually plans to provide. However, our analysis found significant shortfalls in the Army's projected equipment and personnel when measured against design levels; as a result, this approach may not realistically test the capabilities of units that will generally be given less equipment and fewer personnel than called for in the design level. To support ongoing operations, the Army has focused its testing and evaluation efforts thus far on conducting ongoing counterinsurgency operations. However, without testing that is realistic and includes support forces across a full spectrum of potential conflict, the Army faces risks associated with equipment and personnel shortfalls should another type of conflict occur.

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## Lack of Doctrine for Support Units Hinders Testing of the Modular Force

The urgent need for modular combat units has caused the Army to place its priority on assessing these critical units, but it has not completed doctrine that would define how support units—which also have important roles—will operate. Further, unlike its approach for assessing combat units, TRADOC has not identified an organization responsible for performing integrated assessments of its modular support forces. In managing its transformation to the modular design, the Army has assessed combat units across seven domains or areas—doctrine, organization, training, materiel, leadership, personnel, and facilities (DOTMLPF). These areas are interrelated—for example, adding more or different types of



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materiel or equipment can change the capability of a unit that would need to be reflected in the unit's organization or doctrine. TRADOC has made some changes in how its modular units operate based on lessons learned in current operations.

The Army has stated that its transformation efforts will be based on the underlying doctrine that defines how the Army trains, sustains, and fights. Doctrine represents an approved guidebook that details how units are expected to operate, how they will be organized, trained, and equipped to perform their missions. Army officials stated that without doctrine it is difficult to assess a unit because doctrine provides the standards by which a unit is evaluated. Even though many support units have been converted to modular designs, the Army has not yet completed the doctrine that is basic to developing strategies to train and equip units. For example, doctrine for logistics units had not been completed, and the Army did not have a firm estimate for when it will be completed. Similarly, doctrine for all military intelligence and signal units was incomplete, and military intelligence officials were uncertain when this might be finalized. In 2005, the Army Science Board cited the lack of completed doctrine for modular support units as one issue that might limit effectiveness of the modular force. These officials explained that the Army cannot be sure that unit training is appropriate if doctrine is incomplete, because doctrine provides the standards by which the Army assesses unit training. Without approved doctrine, the Army cannot be assured that its efforts to assess and train modular units are adequate.

Once doctrine is in place, the Army can evaluate support units across the other domains of the DOTMLPF domains. In contrast to its approach for combat units, however, the Army has not identified an organization responsible to ensure that integrated assessments of its support units are performed across the DOTMLPF domains that affect the unit's capabilities. For combat brigades, the Army has designated experienced officials within TRADOC's infantry and armor centers, called capabilities managers, who act as focal points for evaluating combat unit designs and coordinating comprehensive assessments of these units across the DOTMLPF domains to determine how best to mitigate potential risks with changes to doctrine and unit design, resolve training and equipping issues, and incorporate lessons learned. By assigning responsibility and authority for assessing forces to the capability managers, the Army has created a focal point for evaluating unit capabilities that clarifies lines of accountability and helps ensure that the designs of support units are fully tested across the DOTMLPF domains. For example, the Stryker Brigade Combat Team capability manager monitors the status of doctrine for

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Stryker units and lessons learned from current operations and updates as necessary doctrine and unit design as needed. Similarly, TRADOC established a capability manager for the Infantry Brigade Combat Team formation who, among other things, monitors the development of assessments across the DOTMLPF domains to ensure these areas are integrated and that the infantry unit design supports operational requirements. For example, the commander of one infantry brigade combat team stated that the infantry capability manager could help resolve concerns regarding training and equipment issues before deploying units to support the global war on terror. Without a responsible focal point to ensure that assessments across the DOTMLPF domains are conducted in an integrated fashion, the Army runs a risk that support units will not have the capabilities needed to support the modular force.

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### The Army Has Not Comprehensively Tested the Modular Force Based on Authorized Equipment and Personnel Levels

TRADOC conducts computer simulations to test and evaluate the capability of the modular force based on designed equipment and personnel levels but does not perform these tests based on either authorized or available equipment or personnel levels.<sup>26</sup> According to the Army, TRADOC assessed the modular force in 2004 based on the resources, equipment, and personnel specified in the modular unit design, not the authorized levels that would reflect the equipment and personnel that the units will actually have. During this assessment process, TRADOC identified some risks related to this modular transformation process and identified enablers,<sup>27</sup> such as those we discussed earlier in this report, that would be needed to mitigate these risks. For example, when TRADOC used computer modeling tools to assess the combat capabilities of modular combat units, it determined that there was a risk associated with having two combat-focused, or maneuver, battalions in a modular combat brigade, as opposed to the three maneuver battalions that made up a combat brigade in the previous divisional structure. Based on this analysis, the Army made adjustments in the design of the units, such as adding battlespace awareness equipment such as unmanned aerial vehicles and increasing the number of intelligence personnel, before accepting the

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<sup>26</sup> TRADOC is responsible for analyzing whether modular combat and support units will be capable of successfully conducting operations required across the full spectrum of conflict.

<sup>27</sup> [GAO-05-325SP](#).

modular designs. However, the Army's design represents an ideal future objective that is unconstrained by resources.<sup>28</sup>

Measured against the design level, the Army is projecting significant shortfalls in a number of different equipment and personnel areas. Since the Army accepted the modularity concept based on the design level, these shortfalls could also affect the capabilities modular units can deliver to combatant commanders. As table 4 shows, our analysis of selected key enabler equipment projections against design requirements found that the Army projects it will have less than half of the design requirement for some key equipment, such as battle command equipment, fire-finder radars, tactical and high frequency radios, and medium-wheeled vehicles. (For details of this analysis, see table 7 in app. I.)

**Table 4: Projected Availability of Selected Key Equipment Enablers at the Design Level in Fiscal Year 2012**

Selected key equipment enablers by category	Percent of design requirement <sup>a</sup> projected to be available
Battle command (includes computers and communications equipment)	40
Firefinder radar	17
High frequency radios	45
Joint network node (signal equipment)	55
Light tactical wheeled vehicles	56
Medium tactical wheeled vehicles	31
Tactical radios	38
Unmanned Prophet intelligence, surveillance and reconnaissance system	61
Unmanned aerial vehicle (small)	61

Source: GAO analysis of Army equipment databases.

Note: We did not analyze the Army's ability to provide equipment to units either deploying, about to be deployed, or returning from current operations. Our analysis also excluded equipment items that the Army authorizes as substitutes because we assessed the Army's progress obtaining modern equipment items. Data retrieved from these databases reflect equipment levels as of April 23, 2007.

<sup>a</sup>Design equipment is more modern equipment. Some of the progress equipping the modular force is based on maintaining older equipment and while this may allow the Army to have the equipment it needs overall, the Army still has shortfalls for specific types of modern equipment.

<sup>28</sup> To manage within expected budgets and what it deems acceptable levels of risk, the Army authorizes equipment and personnel levels that may be significantly lower than the design requirement. Table 1 of this report describes our analysis of projected shortfalls of enablers against the authorized levels.

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According to the Army, such enablers are critical to the modular force. During the development of the new modular brigade combat team designs, the Chief of Staff of the Army directed the Army to develop designs that would be “as capable as” the legacy designs the Army wanted to replace.<sup>29</sup> Working under Army TRADOC, in 2004, the Army Task Force Modularity assessed several brigade combat team design alternatives and concluded that selected key enablers largely determined the performance of each of the alternatives.<sup>30</sup> As a result, the Army made some changes to modular unit blueprints and assumed that modern equipment—including advanced battle command systems, unmanned aerial vehicles, and top of the line intelligence-surveillance-reconnaissance equipment that provide a brigade commander enhanced situational awareness—would be available for these units. These changes were meant to mitigate the risks associated with smaller but more numerous brigades; the Army created four modular brigade combat teams out of three former divisional brigades and reduced from three to two the number of battalions within a combat brigade.<sup>31</sup> The Army approved an initial brigade combat team design, which senior Army leaders assessed as “good enough” for the Army’s modular restructuring.

Since the initial 2004 assessment of the modular brigades, the Army has used a case-by-case review process to analyze specific shortfalls and identify any needed risk mitigation strategies. These assessments have been focused on supporting ongoing counterinsurgency operations. However, because these assessments focus on a few specific shortfalls and do not examine how all the equipment and staffing work together in modular force across the full spectrum of conflict, it is unclear whether the currently authorized personnel and equipment achieve the capability that was originally envisioned.

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<sup>29</sup> The Chief of Staff of the Army identified the need for the Army Modularity Task Force to design brigade combat teams to have the ability to rapidly take action at the tactical and operational level, which relies in part on improving the battlefield commander’s capabilities to assess the situation on the battlefield.

<sup>30</sup> Key enablers included the following equipment items: the all source analysis system, battle command systems, unmanned aerial vehicles, radars, the fire support, and the long-range advanced scout surveillance system.

<sup>31</sup> The Army’s objective is for the new modular combat brigade, which will include about 3,000 to 4,000 personnel, to have at least the same combat capability as a brigade under the division-based force, which ranged from 3,000 to 5,000 personnel.

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## Conclusions

Restructuring and modernizing the Army amid ongoing operations presents a complex and growing challenge. To date, the Army has received billions of dollars in regular and supplemental appropriations that have helped to prepare deploying units, but these investments have not yet translated into improved readiness for non-deployed units. As operations have continued, the target date for rebuilding the Army has slipped considerably and is now more than a decade away. We previously recommended that the Army establish management controls to assess progress in achieving its goal of fully equipping the modular force and report this information to Congress, and the Army agreed. However, in its 2008 report to Congress, the information the Army provided focused primarily on the 2009 budget year and did not include the detailed, year-by-year information that would represent the comprehensive management controls that are needed to demonstrate progress in equipping and staffing the modular force. Without detailed planning for results that includes interim targets for equipping and staffing the modular force and clearly links investments with goals for equipping and staffing modular units, DOD and Congress will not have the information needed to fully assess the Army's progress or determine the impact of any shortfalls. Moreover, without the information the Army needs to show progress toward its goals, the Army could face difficulties competing for increasingly scarce resources in the future and risks additional slippage in its timeline for rebuilding the Army.

The Army's transition to the modular design has provided flexibility in supporting ongoing operations, but the effectiveness of the design across the full range of potential conflicts and with potential shortfalls in key equipment and personnel is still unknown. Understandably, the Army has focused its evaluation efforts on combat brigades supporting ongoing operations, although these are primarily counterinsurgency operations and do not represent the full spectrum of potential conflicts. However, although the integration of support forces with combat brigades is a key factor to the success of the modular design, the underpinning doctrine for modular support forces has yet to be completed. And, unlike its approach for combat forces, the Army has not yet identified an organization or focal point to be responsible for conducting integrated assessments of support forces across the DOTMLPF domains. By conducting an assessment of the total force against the full spectrum of requirements and identifying capability gaps in combat and support units, the Army can identify options that balance short-term needs with long-term risks. Lacking an analysis of the capabilities of the modular force at authorized levels—which represents what the Army actually plans to have—the Army will not be in

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a position to realistically assess whether the capabilities that it is fielding can perform mission requirements.

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## Recommendations for Executive Action

To improve the Army's focus on the relationship between investments and results and the completeness of the information that the Army provides Congress, we recommend the Secretary of Defense direct the Secretary of the Army take the following action:

- Develop and report to Congress a results-oriented plan that provides detailed information on the Army's progress in providing the modular force with key equipment and personnel enablers. The plan should show actual status and planned milestones through 2019 for each type of key equipment and personnel, including
  - goals for on-hand equipment and personnel levels at the end of each fiscal year;
  - projected on-hand equipment and personnel levels at the end of each fiscal year, including planned annual investments and quantities of equipment expected to be procured or repaired as well as key assumptions underlying the Army's plans; and
  - an assessment of interim progress toward meeting overall Army requirements and the risks associated with any shortfalls.

To enhance the Army's efforts to comprehensively assess modular designs we are recommending that the Secretary of Defense direct the Secretary of the Army to take the following three actions:

- Develop a plan, including timelines, for completing doctrine for modular support forces.
- Establish an organizational focal point to ensure that integrated assessments of modular support units' designs are performed across the DOTMLPF domains.
- Assess the capabilities of the modular force based on the amount and type of authorized equipment and personnel to identify capability shortfalls between authorized and design levels and take steps to revise authorized levels where appropriate.

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## Matters for Congressional Consideration

In commenting on these recommendations, DOD either disagreed or offered responses that we considered not to be fully responsive to the intent of our recommendations. We are therefore elevating the following matters for Congressional consideration.

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Congress should consider amending section 323 of Public Law 109-364 to require the Army to include in its statutorily required report on modularity a results-oriented plan that provides (1) goals for on-hand equipment and personnel levels at the end of each fiscal year; (2) projected on-hand equipment and personnel levels at the end of each year, including planned annual investments and quantities of equipment expected to be procured or repaired, as well as key assumptions underlying the Army's plans; and (3) an assessment of interim progress toward meeting overall Army requirements and the risks associated with any shortfalls.

To ensure that Congress is kept informed about the progress in implementing modular designs across the Army's operating forces and the capabilities of the modular force and associated risks from personnel and equipment shortfalls, it should consider revising section 323 Public Law 109-364 to require the Army to report on the status of its transition to modularity to include assessments of (1) the status of development of doctrine for how support forces will train, be sustained, and fight, (2) capabilities of modular units with expected personnel and equipment and risks associated with any shortfalls against required resources.

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## Agency Comments and Our Evaluation

In written comments on a draft of this report, DOD disagreed with one recommendation, agreed with two recommendations, and partially agreed with one recommendation. DOD disagreed with our recommendation to report detailed information on the Army's progress in equipping and staffing the modular force. The department agreed with our recommendations to develop a plan for completing doctrine for modular support forces and establishing a focal point for assessing modular support units' designs. However, the department stated that its current processes adequately address these issues. The department partially agreed with our recommendation to assess the capabilities of the modular force. However, DOD stated that the Army assesses the capabilities of the force in many ways and that its current assessments are adequate and that additional actions are not necessary. As discussed below, we continue to believe that the actions we recommended are important to improve the Army's ability to identify gaps in personnel and equipment and target investments to improve capabilities more efficiently as well to manage the transition of support forces to modular designs and operations. Therefore, we have raised these actions as matters for congressional consideration.

DOD stated that our first recommendation to develop and report to Congress a results-oriented plan that provides detailed information on the Army's progress in providing the modular force with key equipment and

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personnel enablers is not needed because the department's budget, yearly acquisition reporting, and congressionally required reporting provide information on the status and plans for equipping and manning the force. In addition, DOD stated that yearly goals and projections for on-hand equipment and personnel are highly variable, given fluctuations attributed to unit position in the Army Force Generation cycle, equipment repair and reset plans, and planned modernization acquisitions. Although we agree that the Army provides Congress with information on planning, budgeting, and acquisitions systems, these systems do not constitute a coherent plan that provides sufficient information on the agency's progress in equipping and staffing the modular force. Without the benefit of a clear plan and milestones against which to assess progress, the Army cannot assure Congress that it is on a path to restore readiness or when it will have the equipment and personnel it needs. The Army has relied heavily on supplemental funding to support its transition to modularity, and the Army has placed its priority for equipping and staffing on deploying forces. However, in light of pressures on the federal budget, the Army needs to make clear how it will use the funding it requests, when the Army expects to be able to fully resource its forces in accordance with its force generation cycle and the extent to which improvements are being achieved in the interim. Therefore, we have elevated this to a matter for congressional consideration, suggesting that Congress consider directing the Army to include in its annual report on modularity detailed information on equipment and personnel levels, progress toward equipment and staffing goals, and risks associated with any shortfalls.

DOD agreed with our recommendation that the Secretary of the Army develop a plan, including timelines, for completing doctrine for modular support forces but stated that its current assessments are adequate. However, DOD's response did not address two specific issues we raised: (1) the doctrinal manuals for support forces are not complete and (2) no plan with milestones for completing the manuals has been developed. In its comments, DOD stated that it had published Field Manual 3-0, Operations and that this manual included doctrine for modular support forces. We agree that Field Manual FM 3-0 serves as broad-based direction for all Army doctrine; however, it does not include specific modular support force doctrine that defines how modular support units will train, be sustained, and fight. As the report discusses, the Army's Training and Doctrine Command has published, in separate field manuals, doctrine for each of the types of modular combat units that details how these units will train, be sustained, and fight. Our report highlights the need for the support-unit-specific doctrine to provide the standards by which support unit training can be evaluated. Until the Army develops a plan to complete



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such doctrine that includes a timeline and designates appropriate authority and responsibility, it is not clear that priority will be placed on this effort. We believe that the actions the department has taken do not meet the intent of our recommendation to improve the assessment of support forces and that our recommendation has merit. Therefore, we have elevated this to a matter for congressional consideration, suggesting that Congress consider requiring DOD to report on the Army's progress in developing specific doctrine for modular forces, including support forces, in its annual report on Army modularity.

DOD agreed with our recommendation that the Army establish an organizational focal point to ensure that integrated assessments of modular support units' designs are performed across the doctrine, organization, training, materiel, leadership, personnel, and facilities domains. However, in its written comments, the Army indicated that the Deputy Chief of Staff is the focal point for organization, integration, decision making, and execution of the spectrum of activities encompassing requirements definition, force development, force integration, force structure, combat development, training development, resourcing, and privatization and that these activities included being the focal point for integrated assessments of unit designs across the doctrine, organization, training, materiel, leadership, personnel, and facilities domains. However, our recommendation was not directed toward the responsibilities or authorities of senior Army leadership. Rather, our recommendation focuses more narrowly on the need to address the current lack of integrated assessments of modular support units. Our recommendation was intended to encourage as a best practice the Army's current strategy of appointing a focal point for ensuring integrated assessments of modular combat units and to highlight how applying this strategy could improve the integration of assessments for support units. We recognize that there are a number of ways that the Army could address the intent of this recommendation to improve integration of assessments for support forces, so we have not elevated this as a matter for congressional consideration at this time. However, we continue to believe that employing the best practice of appointing a focal point for integration would improve the Army's ability to integrate assessments across domains for each type of support unit.

DOD partially agreed with our recommendation to assess the capabilities of the modular force based on the amount and type of authorized equipment and personnel in order to identify capability shortfalls between authorized and design levels and to revise authorized levels where appropriate. In its comments, DOD stated that the Army assesses the

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capabilities of the force in many ways and that modular brigades are assessed based on the missions assigned and the ability to accomplish these missions given personnel, training, and equipment available. Further, DOD stated that the Army is currently assessing its capabilities and no new direction is needed. We agree that the Army performs many types of assessments of force capabilities. However, although the Army provided us documentation of its assessments of modular combat force designs with the level of equipment called for in the unit design, we found no evidence that the Army has assessed the modular forces with the equipment that these forces can realistically expect to have given the personnel and equipment available. As our report discussed, we identified significant shortfalls in the Army's projected equipment and personnel when measured against the design levels. Further, the Army has focused its testing and evaluation efforts thus far on conducting ongoing counterinsurgency operations. We continue to believe that until the Army begins to test units with realistic personnel and equipment levels and across the full spectrum of conflict, the Army faces risks associated with shortfalls of key equipment should a different type of capability be needed in future operations in a different kind of conflict. Therefore, we elevated this to a matter for congressional consideration, suggesting that Congress consider requiring an assessment of modular force capabilities and associated risks at expected levels of personnel and equipment and across the full spectrum of conflict.

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We are sending copies of this report to the appropriate congressional committees; the Secretary of Defense; and the Secretary of the Army. We will also make copies available to others upon request. In addition, this report will be available at no charge on the GAO web site at <http://www.gao.gov>. If you or your staff have any questions about this report, please contact me at (404) 679-1816 or [pendletonj@gao.gov](mailto:pendletonj@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix IV.



John H. Pendleton  
Director, Defense Capabilities and Management

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*List of Congressional Committees*

The Honorable Carl Levin  
Chairman  
The Honorable John McCain  
Ranking Member  
Committee on Armed Services  
United States Senate

The Honorable Daniel K. Inouye  
Chairman  
The Honorable Thad Cochran  
Ranking Member  
Subcommittee on Defense  
Committee on Appropriations  
United States Senate

The Honorable Ike Skelton  
Chairman  
The Honorable Duncan L. Hunter  
Ranking Member  
Committee on Armed Services  
House of Representatives

The Honorable John P. Murtha  
Chairman  
The Honorable C. W. Bill Young  
Ranking Member  
Subcommittee on Defense  
Committee on Appropriations  
House of Representatives

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# Appendix I: List of Key Equipment and Personnel Enablers

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For the 15 key equipment and the 9 key personnel enabler categories we identified, each profile presents a general description of the equipment item or functions of military personnel. We grouped key enablers into broad equipment and personnel categories that include more specific equipment items and military occupational specialties that are critical to the modular force design. For example, tactical radios are a key equipment enabler category that includes numerous equipment items, such as the Single Channel Ground and Airborne Radio System, that may consist of both older and more modern variants. Signals is a key personnel enabler category that includes two enlisted occupational specialties (nodal network operator/maintainer and satellite communication systems operator/maintainer) and one officer (signal corps officer) occupational specialty.

Our selection methodology generally required that equipment and personnel be assigned to at least two types of modular units (brigade combat teams, multifunctional support brigades, or functional support brigades) to qualify as a key enabler.<sup>1</sup> We excluded certain types of equipment that are important to brigade combat teams, such as Abrams and Bradley tanks, because they are present in both the new brigade designs as well as the previous divisional structure. After we identified a preliminary list of key enablers, we submitted this list to the Headquarters, Department of the Army, for official input and held subsequent discussions with Army officials. Based on our discussions, we developed and submitted to the Department of the Army a final list of key equipment and personnel enablers of the modular force that served as the basis for our data request. An Army procurement official identified the specific equipment line items associated with each of the key equipment enablers and personnel officials verified that we had identified the appropriate skills associated with these enablers.

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<sup>1</sup> We included in our analysis one key enabler category—the Fire Support Sensor System—that did not meet our selection criteria because this equipment system is only assigned to one of the three types of modular units (brigade combat team). We included this key equipment enabler category because a 2004 Army Task Force Modularity study specifically identified the need for units at all levels to have sensor equipment, which this enabler provides. In particular, this enabler category includes the M707 Knight, which the 2004 Army report specifically identified as a “key enabler” of the modular force. An Army official subsequently concurred that this enabler category is critical to the modular force.

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Key Equipment Categories    All-Source Analysis System

The All-Source Analysis System is the Army's primary intelligence integration program, found at all Army echelons at battalion and higher level organizations. This system is composed of a laptop and desktop configuration that provides battlefield commanders with enhanced situational awareness and timely intelligence on enemy force deployments, capabilities, and potential courses of action. Our analysis includes the four equipment items that encompass this system such as All Source Analysis System: AN/TYQ-93. The Office of the Army Deputy Chief of Staff for Programs stated that capabilities from this system will convert into the Army Distributed Command Ground System, which is expected to be fielded to active Army, Army National Guard, and Army Reserve units by the end of fiscal year 2010.

Analysis and Control Element

The Analysis and Control Element is a subsystem of the All Source Analysis System that provides commanders above the brigade level with intelligence processing, analysis, and dissemination capability. This category includes eight different equipment items including the Analysis and Control Element (ACE) AN/TYQ-89 which operates at the divisional level.

Battle Command Systems

Battle command systems enhance the ability of the commander to gain information and make decisions through the use of technology, such as Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance equipment. Our analysis includes 95 equipment specific equipment items within this enabler category, such as the Force XXI Battle Command Brigade-and-Below and the Movement Tracking System. The Force XXI Battle Command Brigade-and-Below forms the principal digital command and control system for the Army at brigade levels and below; it also connects platforms from lower-level units through the Tactical Internet. The Movement Tracking System is a tracking and communications satellite-based system that provides situational awareness to combat support and combat service support units. Army officials in the Office of the Deputy Chief of Staff for Programs indicated that to mitigate the overall shortfall of battle command equipment, the Army will retain older variants that are in oversupply until new equipment is delivered. However, shortfalls in this category are greater than the availability of older equipment.

### Fire Support Sensor System

The Fire Support Sensor System designates targets to enable ground and air delivered precision strike capability. Our analysis includes six equipment items for this enabler category, such as the Armored Knight Fire Support Vehicle, the Bradley Fire Support Vehicle, and the Stryker Fire Support Vehicle. For example, the Knight vehicle provides precision strike capability by locating and designating targets for both ground and air-delivered laser-guided ordnance and conventional munitions. Army officials in the Office of the Deputy Chief of Staff for Programs indicated that force structure changes are expected to reduce overall requirements for this system, which would eliminate potential equipment shortages. The officials also stated the Army plans to continue to modernize its fleet of Fire Support Vehicles with upgrades and replacements of non-repairable equipment.

### Firefinder Radar

Firefinder radar is specialized equipment that detects the location of mortars, artillery, and short and long-range rockets through the use of radar. Our analysis includes six equipment items for this enabler category, such as the Firefinder AN/TPQ-36 that locates medium-range rockets. To mitigate overall shortfalls of these radars, the Army will retain a surplus of older radars until its modernization efforts replace existing equipment.

### Joint Network Node

The Joint Network Node is the Army's modernization of the tactical communications network. This node provides high-speed, high-capacity tactical network communications and data transport down to battalion level, which supports command and control, intelligence, and logistics communications. Our analysis includes 8 equipment items for this enabler category, such as the Battalion Command Post which provides communications at the battalion level. In June 2007, the Under Secretary of Defense for Acquisitions, Logistics, and Technology approved a merger of the Joint Network Node with the Warfight Information Network-Tactical system.

### Long Range Advanced Scout Surveillance

The Long Range Advanced Scout Surveillance System provides long range target acquisition and far target location capabilities to armor and infantry scouts enabling them to conduct reconnaissance and surveillance

operations outside of enemy fire. It is a component of the Fire Support Sensor System, which provides target designation capability for fire support teams. Our analysis includes 3 equipment items for this enabler category, such as the Night Vision Sight Set and Long Range Scout Surveillance System AN/TAS-8. Army officials in the Office of the Deputy Chief of Staff for Programs stated that the Army plans to mitigate shortages by using substitute items that can provide the same or similar capabilities as the required item until the Army can procure the modernized item.

#### Radios – High Frequency

High Frequency radios provide commanders with radios that provide beyond the line of sight voice and data capability. Our analysis includes 17 equipment items for this enabler category, such as the High Frequency Radio Set AN/PRC-150C man pack that is carried by soldiers. The Army's goal is to procure the Joint Tactical Radio System, which provides a networking capability with multichannel, multiwaveform capabilities to increase speed and reliability of service. Currently, the Army is using older radios that it plans to replace; however, these older systems do not exist in enough numbers to address these shortages.

#### Radios – Tactical

Tactical radios provide the ability and flexibility for command and control of combat forces on the battlefield and maintain contact with the lowest level, the squad leader. Our analysis includes 317 equipment items for this enabler category, such as the Enhanced Position and Location Reporting System. The Single Channel Ground and Airborne Radio System radio provides commanders with a secure combat net radio with voice and data handling capability in support of Command and Control operations. The Enhanced Position and Location Reporting System radio provides a tactical Internet and communications capability. The Army's goal is to procure the Joint Tactical Radio System, which provides a networking capability with multichannel, multiwaveform capabilities to increase speed and reliability of service. In the near term, the Army maintains older less capable radios such as earlier versions of the Single Channel Ground and Airborne Radio System to meet its tactical radio requirements.

#### Tactical Wheeled Vehicles – Light

The family of light tactical wheeled vehicles consists of the High Mobility Multipurpose Wheeled Vehicle, which is a light, mobile, four-wheel drive

vehicle. It has six configurations: troop carrier, armament carrier, shelter carrier, ambulance, missile carrier, and scout vehicle. Our analysis includes 43 equipment items for this enabler category such as the 1-1/4 ton cargo and troop carrier. Current operations are placing a heavy burden on these vehicles, and the Army has made numerous design and configuration changes to these vehicles such as improving their armored protection. Ultimately, the Army plans to replace this vehicle with the Joint Light Tactical Vehicle that will be available in 2015.

#### Tactical Wheeled Vehicles – Medium

The family of medium tactical wheeled vehicles provides multipurpose transportation such as re-supply and mobility assets for combat support and combat service support units and includes cargo, tractor, van, wrecker, and dump trucks. Our analysis includes 176 equipment items for this enabler category; some of the older vehicles are 2-1/2 ton cargo vehicles, while newer models are 5 ton trucks. The Army has a medium vehicle modernization strategy that is scheduled to be completed in 2022. Until then, the Army will use older trucks to meet its requirements.

#### Tactical Wheeled Vehicles – Heavy

The family of heavy wheeled tactical vehicles performs unit resupply for combat, combat support, and combat service support units. Our analysis includes 106 equipment items for this enabler category, such as Heavy Expanded Mobility Tactical Trucks, Palletized Load System trucks, Heavy Equipment Transport, and Line Haul trucks. The Heavy Expanded Mobility Tactical Trucks provides all-weather, rapidly deployable transport capabilities for re-supply of combat vehicles and weapon systems. The Palletized Loading System truck is a prime mover with a load handling system. The Heavy Equipment Transport truck transports equipment such as tanks, fighting and recovery vehicles, and self-propelled howitzers. Line Haul trucks include the line haul tractor, light equipment transporter, and dump trucks. To address the shortfall of these trucks, the Army uses older equipment items that are authorized as substitute items.

#### Trojan Spirit

The Trojan Spirit is an intelligence dissemination system that provides high capacity satellite communications services at Top Secret and Special Compartmented Information levels to tactical Army forces. Our analysis includes 14 equipment items for this enabler category, such as the Trojan Spirit Lite. Army officials in the Office of the Deputy Chief of Staff for



Programs stated that the Army plans to modernize and upgrade Trojan Spirit with current technology to prevent the obsolescence of this program until the system is replaced by the Warfighter Information Network – Tactical in the 2014-2021 timeframe.

#### Unmanned Aerial Vehicle – Prophet

The Prophet unmanned aerial vehicle provides an all-weather, near-real-time view of an area of responsibility through the use of signals and intelligence sensors. According to the Army, the Prophet provides the brigade combat team commander with the intelligence capability to visually display the battlespace. Our analysis includes eight equipment items for this enabler category including the Countermeasures Detection System AN/MLQ-40. Army officials in the Office of the Deputy Chief of Staff for Programs stated that the Army's strategy to mitigate equipment shortfalls is to maintain older equipment longer as substitutes until they can be replaced.

#### Unmanned Aerial Vehicle – Small

The small unmanned aerial vehicle provides reconnaissance, surveillance, and target acquisition capabilities to ground commanders. Our analysis includes 51 equipment items for this enabler category, such as the Extended Range Multi-Purpose Unmanned Aircraft System and the Raven B. The Army has a shortfall for these items at the authorized and design level, and the conversion to the modular force structure increased the requirement for these vehicles. However, the Army does not have older equipment to make up for these shortages.

Table 5 illustrates, by key equipment enabler category, the on hand or available equipment at the authorized level for modular force units for the total Army—active and reserve components—in fiscal years 2007 and 2012. For example, the Army projects to have 100 percent of its authorized equipment by 2012 in the Analysis and Control Element category,<sup>2</sup> whereas the Army had 21 percent of authorized levels in fiscal year 2007. In contrast, the Army projects to have 67 percent of authorized levels of

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<sup>2</sup> The Analysis and Control Element is a sub-system of the All Source Analysis System that provides commanders above the brigade level with intelligence processing, analysis and dissemination capability.

**Appendix I: List of Key Equipment and Personnel Enablers**

small unmanned aerial vehicles in fiscal year 2012—an improvement from fiscal year 2007, when it had 34 percent of its authorized level.

**Table 5: Key Equipment Enablers Available at the Authorized Level in Fiscal Years 2007 and 2012.**

<b>Key equipment enablers by category</b>	<b>Description of capabilities</b>	<b>Percent of actual authorized available 2007</b>	<b>Percent of projected authorized available 2012</b>
All-Source analysis system	Provides battlefield commanders with enhanced situational awareness and intelligence on enemy forces.	96	185
Analysis and control element	Furnishes higher-level commanders with intelligence processing, analysis and dissemination capability.	21	100
Battle command systems	Enhances the commander's information gathering and decision-making capability.	50	115
Fire support sensor system	Designates targets to enable ground and air delivered precision-strike capability.	131	177
Firefinder radar	Detects the location of mortars, artillery, and short and long-range rockets through the use of radar.	71	123
Joint network node	Provides high-speed, high-capacity tactical communications down to battalion level.	54	159
Long-range advanced scout surveillance	Affords long-range target acquisition capabilities to armor and infantry scouts enabling them to conduct reconnaissance and surveillance operations.	64	155
Radios – high frequency	Provides commanders with radios that provide beyond the line of sight voice and data capability.	50	101
Radios – tactical	Allows higher-level units to command and maintain contact with lower-level units.	185	208
Tactical wheeled vehicles – light	Provides multipurpose transportation using light, mobile four-wheel drive vehicles.	91	126
Tactical wheeled vehicles – medium	Provides multipurpose transportation using medium trucks.	98	128
Tactical wheeled vehicles – heavy	Provides multipurpose transportation using heavy trucks.	91	125
Trojan Spirit	Furnishes high-capacity, secure satellite communications services to tactical Army units.	93	133
Unmanned aerial vehicle – Prophet	Allows an all-weather, near-real-time view of an area of responsibility through the use of signals and intelligence sensors.	20	99
Unmanned aerial vehicle – small	Provides reconnaissance, surveillance, and target acquisition capabilities to ground commanders.	34	67

Source: GAO analysis of Army data.

Note: Data reflects equipment levels as of April 23, 2007. We did not conduct an analysis of the Army's ability to provide equipment to units either deploying, about to be deployed, or returning from current operations. For the purpose of this table, our analysis excluded equipment items that the Army authorizes as substitutes because we assessed the Army's progress obtaining modern equipment items.

**Appendix I: List of Key Equipment and Personnel Enablers**

Table 6 illustrates, by key equipment enabler category, the on hand or available equipment at the design level for modular force units for the total Army—active and reserve components—in fiscal year 2007. This data includes an analysis at the aggregate level of all equipment on hand in a category and the specific modern equipment required in the design.

**Table 6: Key Equipment Enablers Available and Shortages of Modern Equipment at the Design Level in Fiscal Year 2007**

Key equipment enablers by category	Design requirement (Number required)	All equipment		Design equipment <sup>a</sup>	
		Available	Percent	Available	Percent
All-source analysis system	3,713	1,750	47	1,750	47
Analysis and control element	34	7	21	7	21
Battle command systems	379,275	71,133	19	64,520	17
Fire support sensor system	1,007	1,147	114	381	38
Firefinder radar	204	121	59	0	0
Joint network node	2,713	504	19	504	19
Long range advanced scout surveillance	3,508	1,103	31	1,103	31
Radios - high frequency	23,434	7,467	32	2,910	12
Radios – tactical	543,501	554,645	102	161,734	30
Tactical wheeled vehicles – light	153,960	111,056	72	72,740	47
Tactical wheeled vehicles – medium	87,305	78,307	90	25,989	30
Tactical wheeled vehicle – heavy	57,924	38,527	67	26,402	46
Trojan spirit	388	242	62	221	57
Unmanned aerial vehicle – Prophet	252	114	45	114	45
Unmanned aerial vehicle – small	2,679	834	31	834	31

Source: GAO analysis of Army data.

Note: Data reflect equipment levels as of April 23, 2007. We did not conduct an analysis of the Army’s ability to provide equipment to units either deploying, about to be deployed or returning from current operations. Our analysis also excluded equipment items that the Army authorizes as substitutes because we assessed the Army’s progress obtaining modern equipment items.

<sup>a</sup>Design Equipment is more modern equipment. Some of the progress equipping the modular force is based on maintaining older equipment, and while this may allow the Army to have the equipment it needs overall, the Army still has shortfalls for specific types of modern equipment.

Table 7 illustrates, by key equipment enabler category, the projected available equipment at the design level for modular force units for the total Army—active and reserve components—in fiscal year 2012. This data includes an analysis at the aggregate level of all equipment projected on hand in a category and the design equipment, which represents the specific equipment items that are required in the design.

**Appendix I: List of Key Equipment and Personnel Enablers**

**Table 7: Key Equipment Enablers and Projected Shortages of Modern Equipment at the Design Level in Fiscal Year 2012**

Key Equipment Enablers by Category	Design Requirement (Numbers required)	All Equipment		Design Equipment <sup>a</sup>	
		Available	Percent	Available	Percent
All-source analysis system	3,713	3,363	91	3,363	91
Analysis and control element	34	34	100	34	100
Battle command systems	379,275	164,674	43	150,032	40
Fire support sensor system	1,007	1,548	154	782	78
Firefinder radar	204	209	102	34	17
Joint network node	2,713	1,495	55	1,492	55
Longrange advanced scout surveillance	3,508	2,695	77	2,627	75
Radios – high frequency	23,434	15,191	65	10,634	45
Radios – tactical	543,501	623,672	115	205,153	38
Tactical wheeled vehicles – light	153,960	154,341	100	86,486	56
Tactical wheeled vehicles – medium	87,305	102,206	117	27,103	31
Tactical wheeled vehicles – heavy	57,924	53,194	92	39,139	68
Trojan Spirit	388	345	89	322	83
Unmanned aerial vehicle – prophet	252	573	227	153	61
Unmanned aerial vehicle – small	2,679	1,644	61	1,629	61

Source: GAO analysis of Army data.

Note: Data reflect equipment levels as of April 23, 2007. We did not conduct an analysis of the Army's ability to provide equipment to units either deploying, about to be deployed or returning from current operations. Our analysis also excluded equipment items that the Army authorizes as substitutes because we assessed the Army's progress obtaining modern equipment items.

<sup>a</sup>Design equipment is more modern equipment. Some of the progress equipping the modular force is based on maintaining older equipment and while this may allow the Army to have the equipment it needs overall, the Army still has shortfalls for specific types of modern equipment.

**Key Personnel Enabler Categories**

We identified nine key personnel enabler categories. Within a category, we selected military occupational specialties that are critical to the modular force design.

**Ammunition Personnel**

Ammunition personnel manage and maintain armament, missile and electronic systems, conventional and nuclear munitions and warheads and the detection, identification, rendering safe, recovery, or destruction of hazardous munitions.

### Explosive Ordnance Disposal Officer

The Explosive Ordnance Disposal Officer is responsible for operations that include the location, rendering safe, removal, disposal, and salvage of unexploded conventional, nuclear, biological, and chemical munitions. Explosive ordnance officers are assigned to modular units such as the headquarters units within a combat support brigade (maneuver enhancement). The Army's goal is to fill this occupational branch at 100 percent or higher. To meet staffing goals, the Army offers several incentives to captains, such as choice of occupational branch, duty station, civilian graduate education, military school or cash bonuses in exchange for 3 additional years of obligated service. The Army also offers similar options to pre-commissioned cadets in exchange for extending their initial service obligations and bonuses to recruit active duty Air Force and Navy officers to transfer to the Army.

### Explosive Ordnance Disposal Specialist (Enlisted)

Explosive Ordnance Disposal Specialists locate, identify, render safe, and dispose of conventional, biological, chemical or nuclear ordnance or improvised explosive devices, weapons of mass destruction, and large vehicle bombs. They also conduct intelligence gathering operations of foreign ordnance. Explosive ordnance specialists are assigned to modular units such as the headquarters units within a combat support brigade (maneuver enhancement). The Army's goal is to fill this occupational specialty at 100 percent or higher. Current operations have increased the need for explosive ordnance disposal specialists, a need which has led to a shortfall for this occupational specialty. Shortages are also because a high level of prerequisites needed for personnel to qualify for this specialty, a high attrition rate experienced in training, and low retention of career personnel due to competition from the private sector. To meet staffing goals, the Army has given this specialty a high recruiting priority and offers its second-highest enlistment bonus to new recruits and retention bonuses to personnel who re-enlist. Personnel from overfilled occupational specialties are also encouraged to convert to this one without extending their service obligations, or they can receive a retention bonus by re-enlisting.

### Armor Personnel

Armor personnel direct, operate, and employ tanks, armored vehicles, support infantry, and related equipment.

### Cavalry Scout (Enlisted)

The cavalry scout leads, serves, or assists as a member of a scout unit in reconnaissance, security, and other combat operations. More specifically, the cavalry scout operates and maintains scout vehicles and weapons and engages enemy armor with anti-armor weapons; serves as a member of observation and listening posts; gathers and reports information on terrain features and enemy strength; and collects data for the classification of routes, tunnels and bridges. Cavalry scouts are assigned to modular units such as the headquarters units of battlefield surveillance brigades and the special troop battalion and combined arms battalions of heavy brigade teams. The Army's goal is to fill this occupational specialty at 100 percent or higher. To meet staffing goals, the Army offers enlistment bonuses to new recruits and retention bonuses to personnel who re-enlist.

### Artillery Personnel

Artillery personnel provide fire support to Army units through the employment of field artillery systems. These personnel control, direct and perform technical firing operations, and coordinate the efforts of multiple fire support assets.

### Field Artillery Firefinder Radar Operator (Enlisted)

The field artillery Firefinder radar operator is responsible for operating or providing leadership in the operation of field artillery radar systems. Specific responsibilities include establishing and maintaining radio and wire communications, operating and maintaining Firefinder radars, and constructing fortifications and/or bunkers used during field artillery operations. Field artillery Firefinder radar operators are assigned to modular units such as the fires battalion of a fires brigade. The Army's goal is to fill this occupational specialty at 95 percent or higher. To accommodate growth in staffing needs for field artillery Firefinder radar operators, the Army has significantly increased its recruiting requirements and training capacity. To meet staffing goals, the Army has given this specialty a high recruiting priority and offers its second-highest enlistment bonus for new recruits and retention bonuses for personnel who re-enlist. Personnel from overfilled occupational specialties are also encouraged to convert to this one without extending their service obligations, or they can receive a retention bonus by re-enlisting.

## Civil Affairs Personnel

Civil Affairs personnel support the commander's relationship with civil authorities, the local populace, nongovernmental organizations, and international organizations. These personnel must possess critical skills associated with a specific region of the world, foreign language expertise, political-military awareness, and cross-cultural communications.

### Civil Affairs Officer

The civil affairs officer prepares economic, cultural, governmental and special functional studies, assessments, and estimates. These personnel also coordinate with, enhance, develop, establish, or control civil infrastructure in operational areas to support friendly operations. Additionally, they develop cross-cultural communicative and linguistic skills that facilitate interpersonal relationships in a host country environment. Civil affairs officers are assigned to modular units such as the headquarters unit of the combat support brigade (maneuver enhancement) and heavy brigade combat team. The Army's goal is to fill this occupational branch at 100 percent or higher. To meet staffing goals, the Army offers several incentives to captains, such as choice of occupational branch, duty station, civilian graduate education, military school, or cash bonus in exchange for 3 additional years of obligated service. The Army also offers similar options to pre-commissioned cadets in exchange for extending their initial service obligations and bonuses to recruit active duty Air Force and Navy officers to transfer to the Army.

### Civil Affairs Specialist (Enlisted)

Civil affairs specialists identify critical requirements needed by local citizens in combat or crisis situations. They also locate civil resources to support military operations, mitigate non-combatant injury or incident, minimize civilian interference with military operations, facilitate humanitarian assistance activities, and establish and maintain communication with civilian aid agencies and organizations. Civil affairs specialists are assigned to modular units such as the headquarters unit of the maneuver enhancement brigade and heavy brigade combat team. The Army's goal is to fill this occupational specialty at 100 percent or higher. The Army only recruits personnel to fill this occupational specialty from current servicemembers. To meet staffing goals, the Army offers retention bonuses to personnel who re-enlist and critical skills retention bonuses targeted to senior noncommissioned officers with 17 or more years of service who remain on active duty.

### Mechanical Maintenance Personnel

Mechanical maintenance personnel perform repair functions on Army weapons systems and equipment that support maneuver forces in their preparation for and conduct of operations across the entire operational spectrum.

#### Light-Wheel Vehicle Mechanic (Enlisted)

The Light-Wheel Vehicle Mechanic supervises and performs field, intermediate, and depot-level maintenance and recovery operations on light and heavy wheeled vehicles, associated trailers and material handling equipment. Light-wheel vehicle mechanics are assigned to modular units such as the forward support company within a fires brigade and the brigade support battalion within an infantry brigade team. The Army's goal is to fill this occupational specialty at 95 percent or higher. To meet staffing goals, the Army designated this specialty a high recruiting priority, offers enlistment bonuses to new recruits and retention bonuses to personnel who re-enlist. Personnel from overfilled occupational specialties are also encouraged to convert to this one without extending their service obligations, or they can receive a retention bonus by re-enlisting.

### Military Intelligence Personnel

Military intelligence personnel provide commanders with all-source intelligence assessments and estimates at the tactical, operations, and strategic levels dealing with enemy capabilities, intentions, vulnerabilities, effects of terrain and weather on operations, and predict enemy courses of action. In particular, they collect intelligence assets; produce threat estimates; ensure proper dissemination of intelligence information; conduct interrogation operations of enemy prisoners of war; interpret imagery; and perform counterintelligence operations.

#### Intelligence Analyst (Enlisted)

The intelligence analyst supervises, performs or coordinates the collection, management, analysis, processing and dissemination of strategic and tactical intelligence. Furthermore the intelligence analyst processes incoming information, determines its significance and reliability, and performs analyses to determine changes in enemy capabilities, vulnerabilities, and probable courses of action. Intelligence analysts are assigned to modular units such as the headquarters unit of a



heavy brigade combat team and the military intelligence battalion of the battlefield surveillance brigade. The Army's goal is to fill this occupational specialty at 95 percent or higher. The Army expects staffing needs for this occupational specialty to increase due to the conversion to the modular force. To meet staffing goals, the Army designated this specialty a high recruiting priority, offers enlistment bonuses to new recruits, retention bonuses to junior personnel who re-enlist and critical skills retention bonuses to senior non-commissioned officers who remain on active duty. Personnel from overfilled occupational specialties are also encouraged to convert to this one without extending their service obligations, or they can receive a retention bonus by re-enlisting.

#### Human Intelligence Collector (Enlisted)

Human intelligence collectors supervise and conduct interrogations and debriefings in English and foreign languages and prepare and edit tactical interrogation reports and intelligence information reports. Additionally, they translate and use captured enemy documents and open source foreign language publications in support of promoting peace, the resolution of conflict and the deterrence of war. Human intelligence collectors are assigned to modular units such as the headquarter unit of heavy brigade combat teams and the military intelligence battalion of the battlefield surveillance brigade. The Army's goal is to fill this occupational specialty at 100 percent or higher. The Army expects staffing needs for this occupational specialty to increase because of conversion to the modular force. However, the Army is challenged to increase training capacity for this occupational specialty because of the need for a one-to-one student-teacher ratio. To meet staffing goals, the Army has temporarily suspended foreign language requirements for this specialty, offers enlistment bonuses to new recruits, retention bonuses to junior personnel who re-enlist and critical skills retention bonuses to senior non-commissioned officers with 14 or more years of service who remain on active duty. Personnel from overfilled occupational specialties are also encouraged to convert to this one without extending their service obligations, or they can receive a retention bonus by re-enlisting.

#### Unmanned Aerial Vehicle Operator (Enlisted)

The unmanned aerial vehicle operator supervises or operates unmanned aerial vehicles, to include mission planning, mission sensor/payload operations, launching, remotely piloting and recovering the aerial vehicle. Unmanned aerial vehicle operators are assigned to modular units such as the special troops battalion of heavy and infantry brigade combat teams.

The Army's goal is to fill this occupational specialty at 95 percent or higher. The Army expects staffing needs for this occupational specialty to increase because of the conversion to the modular force. To meet staffing goals, the Army offers enlistment bonuses for new recruits and retention bonuses to personnel who re-enlist, and is increasing its training capacity to meet increased staffing needs.

#### Psychological Operations Personnel

Psychological operations personnel plan, conduct, and evaluate operations that convey selected information and indicators to foreign audiences to influence their emotions, motives, objective reasoning, and ultimately the behavior of foreign governments, organizations, groups, and individuals throughout the entire spectrum of conflict.

#### Psychological Operations Officer

This officer commands or serves on the staff of psychological operations units. Specifically, these officers advise United States military and/or civilian agencies on the use, planning, conduct, and evaluation of psychological operations. Additionally, they inform and train foreign governments and militaries on psychological operations. The Army's goal is to fill this occupational branch at 100 percent or higher. To meet staffing goals, the Army offers several incentives to Captains, such as choice of occupational branch, duty station, civilian graduate education, military school, or cash bonus in exchange for 3 additional years of obligated service. The Army also offers similar options to pre-commissioned cadets in exchange for extending their initial service obligations and bonuses to recruit active duty Air Force and Navy officers to transfer to the Army.

#### Psychological Operations Specialist (Enlisted)

The psychological operations specialist supervises, coordinates, and participates in the analysis, planning, production, and dissemination of tactical and strategic psychological operations. These personnel assist in the collection and reporting of psychological operation data; assist in analyzing and evaluating current intelligence to support psychological operations; conduct research on intended psychological operation targets; and assist in the delivery of psychological operations products.

Psychological operations specialists are assigned to modular units such as the headquarters unit within brigade combat teams. The Army's goal is to fill this occupational specialty at 100 percent or higher. To meet staffing goals, the Army has given this specialty a high recruiting priority, and

offers enlistment bonuses to new recruits and retention bonuses to personnel who re-enlist. Personnel from overfilled occupational specialties are also encouraged to convert to this one without extending their service obligations, or they can receive a retention bonus by re-enlisting.

#### Signal Corps Personnel

Signals personnel manage all facets of Army and designated Department of Defense automated, electronic, and communication assets. More specifically, Signal Corps personnel are involved in the planning, design, engineering, operations, logistics, and evaluation of information systems and networks.

#### Signal Corps Officer

This officer directs and manages the installation, operation, networking and maintenance of signal equipment. Furthermore, the general signal officer advises commanders and staffs on signal requirements, capabilities and operations. Signal officers are assigned to modular units such as the headquarters and support company units within heavy brigade combat teams and the signal company within the battlefield surveillance brigade. The Army's goal is to fill this occupational branch at 100 percent or higher. To meet staffing goals, the Army offers several incentives to captains, such as choice of occupational branch, duty station, civilian graduate education, military school, or cash bonus in exchange for 3 additional years of obligated service. The Army also offers similar options to pre-commissioned cadets in exchange for extending their initial service obligations and bonuses to recruit active duty Air Force and Navy officers to transfer to the Army.

#### Nodal Network Systems Operator-Maintainer (Enlisted)

The nodal network systems operator-maintainer supervises, installs, operates and performs field level maintenance on Internet protocol based high-speed electronic nodal systems, such as the Joint Network Node; integrated network control centers; network management facilities; Communications Security devices; and other equipment associated with network operations. These personnel also perform network management functions in support of maintaining, troubleshooting and re-engineering of nodal assets as needed in support of operational requirements. Nodal network systems operator-maintainers are assigned to modular units such as the signal company within a battlefield surveillance brigade and the

brigade support battalion within a heavy brigade combat team. The Army's goal is to fill this occupational specialty at 95 percent or higher. The Army created this occupational specialty in part because of the conversion of the modular force and is reclassifying personnel from the network switching systems operator-maintainer specialty to this one. To meet staffing goals, the Army offers enlistment bonuses to new recruits and retention bonuses to personnel who re-enlist.

#### Satellite Communication Systems Operator-Maintainer (Enlisted)

The satellite communication systems operator-maintainer supervises, installs, operates and maintains multichannel satellite communications ground terminals, systems, networks and associated equipment. Satellite communication systems operator-maintainer are assigned to modular units such as the special troop battalion within an infantry brigade combat team and the signal network support company within a fires brigade. The Army's goal is to fill this occupational specialty at 90 percent or higher. To meet staffing goals, the Army offers its highest enlistment bonus to new recruits, retention bonuses to personnel who re-enlist, and critical skills retention bonuses for senior enlisted personnel who remain on active duty.

#### Transportation Corps Personnel

Transportation personnel are responsible for the management of all facets of transportation including the planning, operating, coordination, and evaluation of all methods of transportation.

#### General Transportation Officer

The general transportation officer functions as a logistical unit commander or as a staff officer responsible for the functional planning, coordination, procurement and control of the movement of materiel, personnel or personal property on commercial and military transport; and the coordination of all facets of transportation pertaining to water, air, and land transport systems. General transportation officer are assigned to modular units such as the headquarters unit of a sustainment brigade. The Army's goal is to fill this occupational branch at 100 percent or higher. To meet staffing goals, the Army offers several incentives to captains, such as choice of occupational branch, duty station, civilian graduate education, military school, or cash bonus in exchange for 3 additional years of obligated service. The Army also offers similar options to pre-commissioned cadets in exchange for extending their initial service

obligations and bonuses to recruit active duty Air Force and Navy officers to transfer to the Army.

**Motor Transport Operator (Enlisted)**

The motor transport operator supervises or operates wheeled vehicles to transport personnel and cargo in support of operational activities. Motor transport operators are assigned to modular units such as the headquarters unit of a sustainment brigade and the headquarters unit of a maneuver enhancement brigade. The Army’s goal is to fill this occupational specialty at 95 percent or higher. To meet staffing goals, the Army has given this specialty a high recruiting priority, offers its highest enlistment bonus to new recruits, retention bonuses to junior personnel who re-enlist and critical skills retention bonuses for senior enlisted personnel with 19 to 23 years of service who remain on active duty. Personnel from overfilled occupational specialties are also encouraged to convert to this one without extending their service obligations, or they can receive a retention bonus by re-enlisting.

Table 8 illustrates the percentage of active component Army personnel on hand or projected to be on hand at the authorized level in fiscal years 2007 and 2012 by key enlisted and officer career field enabler category.

**Table 8: Percentage of Active Army Enlisted and Officer Personnel On Hand by Career Field at Fiscal Year 2007 and 2012 Authorized Levels**

<b>Key enabler enlisted career field</b>	<b>Percent of authorized level – 2007 actual</b>	<b>Percent of authorized level – 2012 projected</b>
Field artillery	103	96
Armor	105	98
Communication and information systems operation	90	92
Military intelligence	89	94
Psychological operations	90	101
Civil affairs	143	103
Mechanical maintenance	102	93
Transportation	93	93
Ammunition	91	94
<b>Key enabler officer career field</b>		
Signal corps	103	100
Military intelligence	94	101

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**Appendix I: List of Key Equipment and Personnel Enablers**

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<b>Key enabler enlisted career field</b>	<b>Percent of authorized level – 2007 actual</b>	<b>Percent of authorized level – 2012 projected</b>
Psychological operations	108	101
Civil affairs	107	100
Transportation corps	96	101
Ammunition	87	101

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Source: GAO analysis of Army data.

Note: Data reflect personnel levels as of April 30, 2007. We did not conduct an analysis of the Army's ability to provide personnel to units either deploying, about to be deployed, or returning from current operations.

Table 9 illustrates the percentage of active component Army personnel on hand or projected to be on hand at the authorized level in fiscal year 2007 by key enabler enlisted and officer occupational specialty and rank.

**Table 9: Percentage of Active Army Enlisted and Officer Occupational Specialties at Fiscal Year 2007 Authorized Levels**

<b>Key enabler enlisted occupational specialties</b>	<b>Enlisted rank E1-E4 (private-specialist)</b>	<b>Enlisted rank E5 (sergeant)</b>	<b>Enlisted rank E6 (staff sergeant)</b>
Cavalry scout	113	104	93
Civil affairs specialist	N/A <sup>a</sup>	N/A <sup>a</sup>	100
Explosive ordnance disposal specialist	123	111	29
Firefinder radar operator	99	106	93
Human intelligence collector	84	105	39
Light-wheel vehicle mechanic	95	104	102
Military intelligence analyst	107	101	67
Motor transport operator	82	105	107
Network nodal operator-maintainer	68	75	83
Psychological operations specialist	73	108	105
Satellite communication system operator-maintainer	80	101	99
Unmanned aerial vehicle operator	104	131	109
<b>Key enabler officer occupational specialties</b>	<b>Officer rank O1-O3 (second lieutenant-captain)</b>	<b>Officer rank O4 (major)</b>	<b>Officer rank O5 (lieutenant colonel)</b>
Civil affairs officer	101	95	144
Explosive ordnance disposal officer	80	119	95
General signal corps officer	105	88	119
Psychological operations officer	151	73	134
Transportation officer	99	79	94

Source: GAO analysis of Army data.

Note: Data reflect personnel levels as of April 30, 2007. We did not conduct an analysis of the Army's ability to provide personnel to units either deploying, about to be deployed, or returning from current operations.

<sup>a</sup>Active Army civil affairs specialist authorizations are only at the grade of E6 and above because of the level of training and experience required to perform the civil affairs specialist's duties and responsibilities.

Table 10 illustrates the percentage of active component Army personnel available or projected to be available at the design level in fiscal years 2007 and 2012 by key enlisted and officer career field enabler category.

**Appendix I: List of Key Equipment and Personnel Enablers**

**Table 10: Percentage of Active Army Enlisted and Officer Personnel Available by Career Field at Fiscal Year 2007 and 2012 Design Levels**

<b>Key enabler enlisted career field</b>	<b>Percent of design level – 2007 actual</b>	<b>Percent of design level – 2012 projected</b>
Field artillery	44	47
Armor	59	61
Communication and information systems operation	42	41
Military intelligence	61	45
Psychological operations	23	18
Civil affairs	4	5
Mechanical maintenance	38	53
Transportation	28	28
Ammunition	42	55
<b>Key enabler officer career field</b>		
Signal corps	58	52
Military intelligence	50	52
Psychological operations	56	43
Civil affairs	17	19
Transportation corps	31	28
Ammunition	69	101

Source: GAO analysis of Army data.

Note: Data reflect personnel levels as of April 30, 2007. We did not conduct an analysis of the Army's ability to provide personnel to units either deploying, about to be deployed, or returning from current operations.



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# Appendix II: Scope and Methodology

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To assess the Army's plan to guide its efforts to equip and staff the modular force, we obtained and analyzed relevant Army plans and reports to Congress for equipping and staffing the modular force. Because the Army lacks a mechanism to measure progress equipping and staffing the modular force, we developed in conjunction with the Army an analysis of key equipment and personnel enablers of the modular force. Based on our review of key Army modularity studies and reports, we defined key enablers as those pieces of equipment or personnel that are required for the organization to function as planned, providing the modular design with equal or increased capabilities to the previous divisional structure in areas such as a unit's firepower, survivability, and intelligence-surveillance-reconnaissance performance. To develop a preliminary list of key equipment and personnel enablers, we reviewed key Army modularity reports using this definition and received input from Army Training and Doctrine Command (TRADOC), which is responsible for the design and evaluation of modular units, and Army Combined Arms Support Command. In addition, our selection methodology required that equipment and personnel must be assigned to at least two types of modular units (brigade combat teams, multifunctional support brigades, or functional support brigades) to qualify as a key enabler. We excluded certain types of equipment that are important to brigade combat teams, such as Abrams and Bradley tanks, because they are present in both the new brigade designs as well as the previous divisional structure. After we identified a preliminary list of key enablers, we submitted the list to the Headquarters, Department of the Army, for official input and held a follow-up discussion with an Army official to discuss the Army's responses. Based on our analysis and this discussion, we developed a final list of key equipment and personnel enablers of the modular force (See app. I for a list of key equipment and personnel enablers of the modular force). An Army procurement official identified the specific equipment line items associated with each of the key equipment enablers. Our analysis of key equipment enablers compares total Army (active, National Guard, and Reserve) equipment design requirements and authorizations for the operating and institutional forces against total Army on-hand quantities in fiscal year 2007 and planned equipment deliveries by fiscal year 2012.<sup>1</sup> However, our analysis excludes planned procurements funded by

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<sup>1</sup> We obtained data on Army equipment design requirements from the Army Force Management System database, Army authorized equipment levels from the Army Structure and Composition System database, Army on-hand equipment levels from Logistics Information Warehouse and projected deliveries from the Army EQUIPFOR Module and Force Developmental Investment Information System databases.

emergency supplemental requests for fiscal year 2008 because this data had not been entered into the Army equipment databases at the time of our request. Our analysis of key personnel enablers compares active Army personnel design requirements and authorizations for the operating and institutional forces against active Army on-hand personnel strength in fiscal year 2007 and projected personnel strength for fiscal year 2012.<sup>2</sup> This analysis excludes about 13 percent of authorized end strength for the modular force because of military personnel who are in the transient, transfers, holdees, students category, according to Army personnel officials. The Army's fiscal year 2007 to 2012 equipment and personnel plans were the most recent data available to us when we developed this analysis. Data retrieved from Army databases reflect equipment levels as of April 23, 2007, and personnel levels as of April 30, 2007. We shared the data with Department of the Army officials and provided them an opportunity to identify actions the Army intends to take to address equipment and personnel shortfalls. To assess the reliability of relevant Army equipment and personnel databases, we discussed data quality control procedures with Army officials responsible for managing the relevant equipment and personnel databases. Although we did not independently test the data electronically, we determined the data were sufficiently reliable for the purposes of this report. The Army provided updated data on the status of the Army's equipment as compared to the design requirement as of June 29, 2008. We did not assess the reliability of this 2008 data. However, the 2008 data were generally consistent with the data we analyzed in 2007.

To assess the extent to which the Army has developed a comprehensive plan to test and evaluate the design of the modular force, we analyzed TRADOC's modular force assessment process, including documents related to the doctrine, organization, training, materiel, leadership, personnel, and facilities evaluations, and the use of modular force observations teams and lessons learned from ongoing operations. We also met with officials at TRADOC analysis centers and subject-matter experts at Army proponents and centers, for example, the Signal Center, to understand their efforts to develop and assess the design of the modular force. Further, we visited the Future Force Integration Directorate and the

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<sup>2</sup> We obtained data on Army personnel design requirements from the Army Force Management System database, Army authorized personnel levels from the Army Personnel Authorization Module database, Army on-hand personnel levels from the Total Army Personnel Database and projected personnel levels from the Active Army Strength Forecaster.

Army Evaluation Task Force at Fort Bliss to examine the Army approach to assessing the future modular force. In addition, we also assessed the Army's plans to respond to recommendations from prior GAO work related to the evaluation of the modular force across the full-spectrum of conflict. Finally, we examined documents related to the combatant commanders' evaluation of the modular units assigned to the commands.

To assess the extent to which the Army has developed a comprehensive and integrated plan to fund its transformation and expansion of the modular force, we reviewed DOD's fiscal years 2007 to 2009 base budget requests and fiscal years 2007 and 2008 supplemental Global War on Terror requests and met with Army budget officials. We also assessed the Army's plans to respond to recommendations from prior GAO work related to Army modular force and Grow the Force funding plans.

We visited or contacted the following organizations during our review:

Department of Defense

- Office of the Under Secretary of Defense (Acquisition Technology and Logistics), Pentagon, Virginia
- Office of the Under Secretary of Defense (Comptroller), Pentagon, Virginia
- Office of the Under Secretary of Defense (Personnel and Readiness), Pentagon, Virginia
- Office of the Director (Program Analysis and Evaluation), Pentagon, Virginia
- Office of the Chairman, Joint Chiefs of Staff, Force Structure, Resources, and Assessment Directorate (J-8), Pentagon, Virginia

Department of the Army

- Office of the Deputy Chief of Staff for Personnel (G-1), Pentagon, Virginia
- Office of the Deputy Chief of Staff for Logistics (G-4), Pentagon, Virginia
- Office of the Deputy Chief of Staff for Operations and Plans (G-3/5/7), Pentagon, Virginia
- Office of the Deputy Chief of Staff for Programs (G-8), Pentagon, Virginia
- Office of the Deputy Assistant Secretary of the Army for Cost and Economics, Pentagon, Virginia
- Office of the Assistant Secretary of the Army for Manpower and Reserve Affairs, Pentagon, Virginia
- Office of the Assistant Secretary of the Army, Financial Management and Comptroller, Pentagon, Virginia

- Office of the Assistant Chief of Staff for Installation Management, Pentagon, Virginia
- Army Budget Office, Pentagon, Virginia
- U.S. Army Force Management Support Agency, Fort Belvoir, Virginia
- National Guard Bureau, Arlington, Virginia
- U.S. Army Reserve Command, Fort McPherson, Georgia
- U.S. Army Forces Command, Fort McPherson, Georgia
- U.S. Army Human Resources Command, Alexandria, Virginia
- U.S. Army Materiel Command, Fort Belvoir, Virginia
- U.S. Army Tank-automotive and Armaments Command, Warren, Michigan
- U.S. Army Training and Doctrine Command, Fort Monroe, Virginia
  - Major Subordinate Organizations
    - Army Capabilities Integration Center, Fort Monroe, Virginia
      - Future Force Integration Directorate, Fort Bliss, Texas
    - Combined Arms Support Command, Fort Lee, Virginia
    - Combined Arms Center, Fort Leavenworth, Kansas
      - Current Force Integration Directorate, Fort Leavenworth, Kansas
  - -Center for Army Lessons Learned, Fort Leavenworth, Kansas
  - TRADOC Analysis Centers: Fort Leavenworth, Kansas; White Sands Missile Range, New Mexico; Fort Lee, Virginia
- U.S. Army Proponents
  - Infantry School, Fort Benning, Georgia
  - Signals Center, Fort Gordon, Georgia
  - Intelligence Center and Office Chief of Military Intelligence, Fort Huachuca, Arizona
- U.S. Army Schools
  - U.S. Army Infantry School, Fort Benning, Georgia
  - U.S. Army Signals School, Fort Gordon, Georgia
  - U.S. Army Intelligence School, Fort Huachuca, Arizona
  - U.S. Army Quartermaster School, Fort Lee, Virginia

#### Other Government Agencies

- Congressional Budget Office, Washington, D.C.
- Congressional Research Service, Washington, D.C.

We conducted this performance audit from April 2007 to September 2008 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

# Appendix III: Comments from the Department of Defense



ACQUISITION  
TECHNOLOGY  
AND LOGISTICS

OFFICE OF THE UNDER SECRETARY OF DEFENSE  
3000 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3000

OCT 10 2008

Mr. John H. Pendleton  
Director, Defense Capabilities and Management  
U.S. Government Accountability Office  
441 G Street, N.W.  
Washington, DC 20548

Dear Mr. Pendleton:

This is the Department of Defense (DoD) response to the GAO draft report, "FORCE STRUCTURE: The Army Needs a Results-Oriented Plan to Equip and Staff Modular Forces and a Thorough Assessment of Force Capabilities," dated September 5, 2008 (GAO Code 351007/GAO-08-1066). Detailed comments on the report recommendations are enclosed.

The Department concurs with two of the draft report's recommendations, non-concurs with one, and partially concurs with the other. The rationales for our position are included in the enclosure.

We appreciate the opportunity to comment on the draft report. My point of contact for this effort is Ms. Anne Swaneck, PSA/LW&M, [Anne.Swaneck@osd.mil](mailto:Anne.Swaneck@osd.mil), (703) 693-9879.

Sincerely,

David G. Ahern  
Director  
Portfolio Systems Acquisition

Enclosure:  
As stated



GAO DRAFT REPORT – DATED SEPTEMBER 5, 2008  
GAO CODE 351007/GAO-08-1066

“FORCE STRUCTURE: The Army Needs a Results-Oriented Plan to Equip and Staff  
Modular Forces and a Thorough Assessment of Force Capabilities”

DEPARTMENT OF DEFENSE COMMENTS  
TO THE RECOMMENDATIONS

**RECOMMENDATION 1:** The GAO recommends that the Secretary of Defense direct the Secretary of the Army to develop and report to Congress a results-oriented plan that provides detailed information on the Army’s progress in providing the modular force with key equipment and personnel enablers. The plan should show actual status and planned milestones through 2019 for each type of key equipment and personnel, including:

- goals for on-hand equipment and personnel levels at the end of each fiscal year;
- projected on-hand equipment and personnel levels at the end of each fiscal year, including planned annual investments and quantities of equipment expected to be procured or repaired, as well as key assumptions underlying the Army’s plans; and
- an assessment of interim progress toward meeting overall Army requirements and the risks associated with any shortfalls.

**DOD RESPONSE:** Non-Concur. Army Modularity is a strategy for having interchangeable units to support operations. It is not a program for equipping, manning, or modernizing the force that requires a plan separate from the Army’s overall equipping and manning plans. The Department’s budget, yearly acquisition reporting, and Congressionally required reporting such as the annual Army Report on Modularity provide information on the status and plans for equipping and manning the force. The Army management of equipment and personnel are tied to the Army’s force generation model, growth of the Army, appropriated budget requests, and war time demands. The numbers and types of modular brigades, as well as the general manning and equipping needs for each type of brigade have been established and are continuously assessed to keep pace with the changing operational environment. This, in conjunction with unit readiness assessments, acquisition production plans, and strategic force analysis, provides the Department with adequate plans to inform capability and resourcing decisions. Projected on-hand equipment and personnel manning levels are forecasted semi-annually by the Army. Detailing yearly goals and projections for on-hand equipment and personnel is highly variable, given fluctuations attributed to unit position in the Army Force Generation cycle, equipment repair and reset plans, and planned modernization acquisitions.

The Army’s year to year equipping, staffing, and readiness plans, for all brigades, are considered Department resourcing priorities and are based on: (1) deployment needs to fulfill missions; (2) existing Army equipment and personnel; (3) planned upgrades and expansions; and (4) emerging needs.

**RECOMMENDATION 2:** The GAO recommends that the Secretary of Defense direct the Secretary of the Army to develop a plan, including timelines, for completing doctrine for modular support forces.

**DOD RESPONSE:** Concur. The Army released an updated Field Manual 3-0, "Operations," on February 1, 2008. This includes the doctrine for the Modular Force and the support forces.

**RECOMMENDATION 3:** The GAO recommends that the Secretary of Defense direct the Secretary of the Army to establish an organizational focal point to ensure that integrated assessments of modular support units' designs are performed across the doctrine, organization, training, materiel, leadership, personnel, and facilities (DOTMLPF) domains.

**DOD RESPONSE:** Concur. Army General Order #3 identifies the Deputy Chief of Staff, G-3/5/7, as the focal point for organization, integration, decision-making, and execution of the spectrum of activities encompassing requirements definition, force development, force integration, force structuring, combat development, training development, resourcing, and prioritization. These responsibilities include being the Department of the Army organizational focal point to ensure that integrated assessments of modular support units' designs are performed across the doctrine, organization, training, materiel, leadership, personnel, and facilities (DOTMLPF) domains. The Army Training and Doctrine Command and the Army Test and Evaluation Command support G-3/5/7 in this effort.

**RECOMMENDATION 4:** The GAO recommends that the Secretary of Defense direct the Secretary of the Army to assess the capabilities of the modular force based on the amount and type of authorized equipment and personnel to identify capability shortfalls between authorized and design levels and take steps to revise authorized levels where appropriate.

**DOD RESPONSE:** Partially concur. The Army assesses capabilities of the force in many ways. Key elements in unit capability assessment are the training of the brigades and the unit status reports. Additionally, the modular brigades are assessed based on the missions assigned and the ability to accomplish these missions given personnel, training, and equipment available. Unit readiness assessments frame both general unit readiness and readiness relative to a specific mission. Equipment readiness is a portion of this assessment. Due to the fact the Army is currently assessing its capabilities, additional Secretary of Defense direction is not required at this time.

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# Appendix IV: GAO Contact and Staff Acknowledgments

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## GAO Contact

John H. Pendleton (404) 679-1816 or [pendletonj@gao.gov](mailto:pendletonj@gao.gov)

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## Acknowledgments

In addition to the contact named above, Gwendolyn Jaffe, Assistant Director; Margaret Morgan, Assistant Director; Kelly Baumgartner; Hillary Benedict; Herbert Bowsher; Kurt Burgeson; Grace Coleman; Stephen Faherty; Barbara Gannon; David Hubbell; Jim Melton; Steve Pruitt; Steven Rabinowitz; Terry Richardson; Kathryn Smith; Karen Thornton; and J. Andrew Walker made major contributions to this report.



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