

October 2005

MILITARY READINESS

DOD Needs to Identify and Address Gaps and Potential Risks in Program Strategies and Funding Priorities for Selected Equipment



G A O

Accountability * Integrity * Reliability



Highlights of [GAO-06-141](#), a report to congressional committees

Why GAO Did This Study

With continued heavy military involvement in operations in Iraq and Afghanistan, the Department of Defense (DOD) is spending billions of dollars sustaining or replacing its inventory of key equipment items while also planning to spend billions of dollars to develop and procure new systems to transform the department's warfighting capabilities. GAO developed a red, yellow, green assessment framework to (1) assess the condition of 30 selected equipment items from across the four military services, and (2) determine the extent to which DOD has identified near- and long-term program strategies and funding plans to ensure that these items can meet defense requirements. GAO selected these items based on input from the military services, congressional committees, and our prior work. These 30 equipment items included 18 items that were first assessed in GAO's 2003 report.

What GAO Recommends

GAO recommends that DOD reassess and report annually on its near- and long-term programs for all key equipment items until replacements are fielded. DOD partially agreed that it needs to reassess its program strategies but did not agree that it needed to provide this information in an annual report to Congress. As a result, GAO is recommending that Congress require DOD to report this information to ensure that key equipment deficiencies are addressed in DOD's budget.

www.gao.gov/cgi-bin/getrpt?GAO-06-141.

To view the full product, including the scope and methodology, click on the link above. For more information, contact William M. Solis at (202) 512-8365 or solisw@gao.gov.

MILITARY READINESS

DOD Needs to Identify and Address Gaps and Potential Risks in Program Strategies and Funding Priorities for Selected Equipment

What GAO Found




While the fleet-wide condition of the 30 equipment items GAO selected for review varied, GAO's analysis showed that reported readiness rates declined between fiscal years 1999 and 2004 for most of these items. The decline in readiness, which occurred more markedly in fiscal years 2003 and 2004, generally resulted from (1) the continued high use of equipment to support current operations and (2) maintenance issues caused by the advancing ages and complexity of the systems. Key equipment items—such as Army and Marine Corps trucks, combat vehicles, and rotary wing aircraft—have been used well beyond normal peacetime use during deployments in support of operations in Iraq and Afghanistan. DOD is currently performing its Quadrennial Defense Review, which will examine defense programs and policies for meeting future requirements. Until the department completes this review and ensures that condition issues for key equipment are addressed, DOD risks a continued decline in readiness trends, which could threaten its ability to continue meeting mission requirements.

The military services have not fully identified near- and long-term program strategies and funding plans to ensure that all of the 30 selected equipment items can meet defense requirements. GAO found that, in some cases, the services' near-term program strategies have gaps in that they do not address capability shortfalls, funding is not included in DOD's 2006 budget request, or there are supply and maintenance issues that may affect near-term readiness. Additionally, the long-term program strategies and funding plans are incomplete for some of the equipment items GAO reviewed in that future requirements are not identified, studies are not completed, funding for maintenance and upgrades was limited, or replacement systems were delayed or not yet identified. Title 10 U.S.C. § 2437 requires the military services to develop sustainment plans for equipment items when their replacement programs begin development, unless they will reach initial operating capability before October 2008. However, most of the systems that GAO assessed as red had issues severe enough to warrant immediate attention because of long-term strategy and funding issues, and were not covered by this law. As a result, DOD is not required to report sustainment plans for these critical items. For the next several years, funding to sustain or modernize aging equipment will have to compete with other DOD priorities, such as current operations, force structure changes, and replacement system acquisitions. Without developing complete sustainment and modernization plans and identifying funding needs for all priority equipment items, DOD may be unable to meet future requirements for defense capabilities. Furthermore, until DOD develops these plans, Congress will be unable to ensure that DOD's budget decisions address deficiencies related to key military equipment.

GAO's red, yellow, and green assessments of the condition, program strategies, and funding plans for the 30 selected military equipment items are shown on the following page.

GAO's Assessment Summary of 30 Selected Equipment Items

Equipment	Condition	Near-term program strategy and funding plan	Long-term program strategy and funding plan
Army			
Abrams Tank	Yellow	Yellow	Green
Bradley Fighting Vehicle	Yellow	Yellow	Red
M113 Armored Personnel Carrier	Green	Yellow	Red
Heavy Expanded Mobility Tactical Truck	Yellow	Yellow	Yellow
High Mobility Multi-Purpose Wheeled Vehicle	Green	Yellow	Yellow
Family of Medium Tactical Vehicles	Green	Yellow	Yellow
AH-64 A/D Apache Helicopter	Yellow	Green	Green
CH-47 D/F Chinook Helicopter	Red	Yellow	Green
OH-58D Kiowa Helicopter	Green	Green	Green
Marine Corps			
M1A1 Abrams Tank	Red	Yellow	Yellow
Light Armored Vehicle Command and Control and 25 variants	Yellow	Yellow	Yellow
Assault Amphibian Vehicle- Personnel, C2, and Recovery variants	Yellow	Yellow	Yellow
Medium Tactical Vehicle Replacement	Green	Yellow	Green
AV-8B Harrier Jet	Yellow	Green	Yellow
AH-1W Super Cobra Helicopter	Yellow	Yellow	Yellow
CH-46E Sea Knight Helicopter	Yellow	Red	Red
CH-53E Super Stallion Helicopter	Yellow	Yellow	Red
Navy			
DDG-51 Arleigh Burke Class Destroyer	Yellow	Green	Yellow
FFG-7 Oliver Hazard Perry Class Frigate	Yellow	Yellow	Yellow
LPD-4 Amphibious Transport Dock Ship	Yellow	Yellow	Yellow
F/A-18 Hornet/Super Hornet Aircraft	Green	Yellow	Yellow
EA-6B Prowler Aircraft	Yellow	Yellow	Yellow
P-3 Orion Aircraft	Red	Yellow	Red
Standard Missile-2 Surface-to-Air Missile	Yellow	Green	Red
Air Force			
F-15 Eagle/Strike Eagle Aircraft	Green	Green	Green
F-16 Fighting Falcon Aircraft	Green	Green	Green
B-1 Lancer Bomber	Yellow	Green	Green
B-2 Spirit Bomber	Yellow	Green	Green
C-5 Galaxy Transport Aircraft	Yellow	Yellow	Yellow
KC-135 Stratotanker Aircraft	Yellow	Yellow	Red

-  Red indicates a problem or issue that is prevalent and severe enough to warrant immediate attention by DOD, the military services, and/or Congress.
-  Yellow indicates the existence of a problem or issue that warrants attention by DOD, the military services, and/or Congress, and if left unattended may worsen.
-  Green indicates that we did not identify any specific problems or issues at the time of our review or that any existing problems or issues we identified are either not severe enough in nature to warrant additional action or are already being addressed by DOD, the military services, and/or Congress.

Source: GAO analysis of military service data.

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Abbreviations

AAV	Assault Amphibian Vehicle
ARNG	Army National Guard
C2	Command and Control or Command and Communications
DOD	Department of Defense
FMTV	Family of Medium Tactical Vehicles
FYDP	Future Years Defense Program
GWOT	Global War on Terrorism
HEMTT	Heavy Expanded Mobility Tactical Truck
HMMWV	High Mobility Multi-Purpose Wheeled Vehicle
LAV	Light Armored Vehicle
MTVR	Medium Tactical Vehicle Replacement
OSD	Office of the Secretary of Defense
USAR	U.S. Army Reserve

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United States Government Accountability Office
Washington, D.C. 20548

October 25, 2005

Congressional Committees

The Department of Defense (DOD) is spending billions of dollars sustaining and transforming the current military force structure while it is heavily involved in operations in Iraq and Afghanistan. All of the military services have been utilizing selected equipment items for operations in Iraq and Afghanistan and must plan to sustain, recapitalize, or replace their existing equipment, while concurrently planning to spend billions of dollars to develop and procure new systems that will transform DOD's war-fighting capabilities.

In December 2003, we reported that the condition of 25 selected military equipment items varied from very good to very poor and that, although the services had program strategies for sustaining, modernizing, or replacing most of the items reviewed, there were some gaps in those strategies.¹ The report further stated that for 15 of the items reviewed, the funding requested by DOD did not appear to match the services' program strategies to sustain or replace the items. In that report, we recommended that the Secretary of Defense reassess the program strategies and funding priorities for key equipment items to ensure that the equipment items are sustained until replacement items are fielded. We also recommended that DOD highlight for Congress the risks involved in not fully funding the sustainment of these equipment items and the steps the department is taking to address those risks. Congress included a provision in the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005² that amends Title 10 of the U.S. code to require that, whenever a new major defense acquisition program begins development, the defense acquisition authority responsible for that program shall develop a sustainment plan for the existing system until the system under development replaces that system.

Since our December 2003 report, DOD's continued operations in Iraq and Afghanistan have resulted in additional wear and tear on military equipment. In fiscal years 2004 and 2005, the President requested, and

¹GAO, *Military Readiness: DOD Needs to Reassess Program Strategy, Funding Priorities, and Risks for Selected Equipment*, GAO-04-112 (Washington, D.C.: December 2003).

²Pub. L. No. 108-375 § 805 (2004) (codified at 10 U.S.C. § 2437).

Congress appropriated, supplemental funds for ongoing military activities in Iraq and Afghanistan that included funds to refurbish and replace vehicles, weapons, and equipment used in the operations.³ In February 2005, the President presented Congress with his fiscal year 2006 budget request and out-year projections that contained changes in DOD spending plans and delayed the fielding of some equipment replacement systems, as documented in DOD's Program Budget Decision 753. Congress is currently considering this request as well as over \$40 billion in additional fiscal year 2005 supplemental appropriations to include in the fiscal year 2006 regular defense appropriation. The military services have also begun developing the justification to request additional 2006 supplemental appropriations. While supplemental funds may enable DOD to meet near-term war-related equipment needs, the toll of continuing operations has raised concerns about the ability of DOD's long-term programming and funding strategies to meet equipment needs.

DOD recognizes that additional wear and tear is being put on equipment used to support ongoing operations in Iraq and Afghanistan and has conducted a study to measure the effects of the sustained use of equipment at levels beyond normal peacetime use and in operations outside of the equipment's normal operating parameters. According to this study, equipment is being used at much higher rates in combat operations than it is in routine peacetime missions. In Iraq and Afghanistan, usage rates have run two to eight times higher than comparable peacetime rates. In Iraq, for example, Army Bradley Fighting Vehicles have been used at six times their peacetime rates. Moreover, equipment is also employed in harsher environments and in more demanding ways in these combat operations. Although initial results of this study and related costs have been released, DOD is continuing to assess the effects of high operating rates and harsh conditions on equipment.

Since congressional interest in the wear and tear being placed on military equipment and the funding needed to reconstitute this equipment remains, we conducted an analysis of 30 selected military equipment items, including 18 items from our December 2003 report, to update your committees on which key equipment items warrant attention by DOD

³Emergency Supplemental Appropriations Act for Defense and for the Reconstruction of Iraq and Afghanistan, 2004, Pub. L. No. 108-106 (2003); Department of Defense Appropriations Act, 2005, Pub. L. No. 108-287, (2004); and Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Tsunami Relief, 2005, Pub. L. No. 109-13.

and/or Congress. The specific objectives of this review were to (1) assess the fleet-wide condition of selected key equipment items and (2) determine the extent to which DOD has identified near- and long-term program strategies and funding plans to ensure that selected key equipment items can meet requirements. Our assessments apply only to the 30 equipment items we reviewed; therefore, the results cannot be projected to the entire inventory of DOD equipment.

We selected the 30 equipment items based upon input from the military services, congressional committees, and our prior work. To assess the condition of these equipment items, we obtained fleet-wide data on equipment age, expected service life, and other specific service performance indicators such as mission capable rates,⁴ utilization rates,⁵ and various other metrics for fiscal years 1999 through 2004. Our observations and assessments were made across the military services—Army, Air Force, Navy, and Marine Corps—for both the active duty inventory as well as equipment in the National Guard and reserve forces. In assessing fleet-wide equipment condition, we also considered the extent to which each equipment item was used for operations in Iraq or Afghanistan and its associated performance indicators while deployed.⁶ Our review of DOD’s near- and long-term program strategies for these equipment items focused on the extent to which the services have developed or updated their plans to sustain, modernize, or replace⁷ the equipment items in order to meet mission requirements. Our review of near- and long-term funding plans focused on the extent to which the funding for the strategies is projected in the Future Years Defense Program (FYDP).⁸ According to DOD officials, the FYDP takes the services’ priorities into consideration, while

⁴Mission capable rates are measures of material condition that indicate the equipment can perform at least one and potentially all of its designated missions.

⁵Utilization rates refer to flying hours, tank miles, and steaming days.




⁶If we were able to collect data on deployed mission capable rates for the selected equipment items, we discussed this information in the relevant appendix section.

⁷Sustaining refers to maintaining the equipment to prolong its operations; modernizing refers to upgrading equipment items or replacing specific parts; and replacing refers to complete replacement of one equipment item with a new equipment item, e.g., the Marine Corps plans to replace the CH-46E with the MV-22 Osprey.

⁸The Future Years Defense Program reflects the department’s official projection of the forces and resources needed to support the programs approved by the Secretary of Defense for the biennial budget years and the following 4 years.

balancing future investment and risk. We defined the near term as fiscal years 2005, 2006, and 2007, and the long term as fiscal years 2008 and beyond.

To determine which equipment items require additional attention by the department, the military services, and/or Congress, we developed an assessment framework based on three criteria: (1) the extent of the existence of a problem or issue, (2) the severity of the problem or issue, and (3) how soon the problem or issue needs to be addressed. To indicate the existence, severity, or urgency of problems identified for the 30 selected equipment items, we used a traffic light approach—red, yellow, or green—as follows:

-  Red indicates a problem or issue that is prevalent and severe enough to warrant immediate attention by DOD, the military services, and/or Congress.
-  Yellow indicates the existence of a problem or issue that warrants attention by DOD, the military services, and/or Congress, and if left unattended may worsen.
-  Green indicates that we did not identify any specific problems or issues at the time of our review or that any existing problems or issues we identified are either not severe enough in nature to warrant additional action or are already being addressed by DOD, the military services, and/or Congress.

While we attempted to obtain consistent metrics for each of the three categories across all four of the military services, data availability varied significantly by service and type of equipment. Our assessments, therefore, are based on the data available from multiple sources; however, we did not independently verify the data provided by these sources. Our assessments also represent the problems and issues we identified at the specific point in time that we conducted our work, and can change quickly given current events. Although our assessments for each of the three categories—condition, near-term program strategies and funding plans, and long-term program strategies and funding plans—are largely qualitative in nature and are derived from consensus judgments, our analyses are based on data provided by the military services and discussions with military service officials and program managers for the individual equipment items. We assessed the reliability of the services' equipment readiness data by (1) comparing key data elements to our observations of equipment items at




selected units, (2) reviewing relevant documents, and (3) interviewing knowledgeable officials. We determined that the data obtained from DOD, the military services, and the combatant commands were sufficiently reliable for our use. For a complete description of our methodology, see appendix I. Appendix II contains our detailed assessments for each of the 30 equipment items. We performed our review from July 2004 through July 2005 in accordance with generally accepted government auditing standards.

Results in Brief

Our assessments of the fleet-wide condition and near- and long-term program strategies and funding plans for the 30 military equipment items that we included in our review indicate that the items range from some that have severe problems and require immediate attention to those that do not have problems or issues warranting action by the DOD, military services, and/or Congress, as shown in figure 1. Specifically, we identified severe problems and issues related to the fleet-wide condition and/or program and funding strategies of the Army's Bradley Fighting Vehicle, M113 Armored Personnel Carrier, and CH-47D/F helicopter; the Marine Corps' M1A1 tank, CH-46E helicopter, and CH-53E helicopter; the Navy's P-3 aircraft and Standard Missile-2; and the Air Force's KC-135 aircraft and we rated all of these military equipment items as red in figure 1. For example, the Marine Corps' CH-46E helicopter received a red rating for its near-term program strategy and funding plan because the service may be unable to meet its near-term requirements due to potential aircraft and repair parts shortages. The fleet-wide condition or program strategies of many of the other equipment items shown as yellow in figure 1, while not yet severe enough to warrant immediate action by DOD, the military services, and/or Congress, also showed signs of problems that, if not addressed, could become severe. For example, we assessed the fleet-wide condition of the Army's Abrams tank as yellow because, while it generally met or exceeded the service mission capable goal, the rates were on a downward trend as a result of shortages of both spare parts and the trained personnel needed to replace these parts and to repair the equipment items. Reserve military technicians who repair this equipment at home are, in many cases, currently deployed overseas.

Figure 1: GAO's Assessment Summary of 30 Selected Equipment Items

Equipment	Condition	Near-term program strategy and funding plan	Long-term program strategy and funding plan
Army			
Abrams Tank	Yellow	Yellow	Green
Bradley Fighting Vehicle	Yellow	Yellow	Red
M113 Armored Personnel Carrier	Green	Yellow	Red
Heavy Expanded Mobility Tactical Truck	Yellow	Yellow	Yellow
High Mobility Multi-Purpose Wheeled Vehicle	Green	Yellow	Yellow
Family of Medium Tactical Vehicles	Green	Yellow	Yellow
AH-64 A/D Apache Helicopter	Yellow	Green	Green
CH-47 D/F Chinook Helicopter	Red	Yellow	Green
OH-58D Kiowa Helicopter	Green	Green	Green
Marine Corps			
M1A1 Abrams Tank	Red	Yellow	Yellow
Light Armored Vehicle Command and Control and 25 variants	Yellow	Yellow	Yellow
Assault Amphibian Vehicle- Personnel, C2, and Recovery variants	Yellow	Yellow	Yellow
Medium Tactical Vehicle Replacement	Green	Green	Green
AV-8B Harrier Jet	Yellow	Green	Yellow
AH-1W Super Cobra Helicopter	Yellow	Yellow	Yellow
CH-46E Sea Knight Helicopter	Yellow	Red	Red
CH-53E Super Stallion Helicopter	Yellow	Yellow	Red
Navy			
DDG-51 Arleigh Burke Class Destroyer	Yellow	Green	Yellow
FFG-7 Oliver Hazard Perry Class Frigate	Yellow	Yellow	Yellow
LPD-4 Amphibious Transport Dock Ship	Yellow	Yellow	Yellow
F/A-18 Hornet/Super Hornet Aircraft	Green	Yellow	Yellow
EA-6B Prowler Aircraft	Yellow	Yellow	Yellow
P-3 Orion Aircraft	Red	Yellow	Red
Standard Missile-2 Surface-to-Air Missile	Yellow	Green	Red
Air Force			
F-15 Eagle/Strike Eagle Aircraft	Green	Green	Green
F-16 Fighting Falcon Aircraft	Green	Green	Green
B-1 Lancer Bomber	Yellow	Green	Green
B-2 Spirit Bomber	Yellow	Green	Green
C-5 Galaxy Transport Aircraft	Yellow	Yellow	Yellow
KC-135 Stratotanker Aircraft	Yellow	Yellow	Red

-  Red indicates a problem or issue that is prevalent and severe enough to warrant immediate attention by DOD, the military services, and/or Congress.
-  Yellow indicates the existence of a problem or issue that warrants attention by DOD, the military services, and/or Congress, and if left unattended may worsen.
-  Green indicates that we did not identify any specific problems or issues at the time of our review or that any existing problems or issues we identified are either not severe enough in nature to warrant additional action or are already being addressed by DOD, the military services, and/or Congress.

Source: GAO analysis of military service data.

While the fleet-wide condition of 30 equipment items we selected for review varied by service, level of current use, and age, our analysis showed that reported readiness rates⁹ are declining between fiscal years 1999 and 2004 for most of these items, particularly for those equipment items we rated as red or yellow in figure 1. The decline in readiness, which occurred more markedly in fiscal years 2003 and 2004, generally resulted from (1) the continued high use of equipment to support current operations and (2) maintenance issues resulting from the advancing ages (such as equipment that is more than 20 years old) and complexity (such as Navy ships, which are systems of systems) of the equipment items. Some key equipment items—such as Army and Marine Corps trucks, combat vehicles, and helicopters—have been used well beyond normal peacetime use while deployed. For example, according to Marine Corps officials, the Assault Amphibian Vehicles experienced utilization rates as high as 11 times the normal peacetime rates while operating in Iraq. Army and Marine Corps officials stated that a complete inspection of the deployed equipment will be necessary once it returns from theater before the full extent of its readiness deficiencies can be known. Many of the selected systems have either a fleet-wide average age of more than 20 years, such as the Navy's LPD-4 Amphibious Transport Dock Ship, or entered the inventory prior to the 1980s, such as the Air Force's KC-135 Stratotanker aircraft. These systems are likely to reach the end of their useful lives in this decade unless major modernizations, some of which are planned or underway, are made. Some of the problems degrading the fleet-wide condition of these aging systems include maintenance problems due to parts shortages or obsolescence, shortages of trained maintenance personnel, corrosion, deferred maintenance, and airframe fatigue. For 8 of the 30 items in this review we did not identify any specific problems that warrant additional attention by DOD, the military services, or Congress, or that previously identified problems were already being addressed, so we assessed their fleet-wide condition as green. Also, DOD is currently performing its Quadrennial Defense Review, which will examine defense programs and policies for meeting future requirements.¹⁰ Until the department completes this review and ensures that condition issues for key equipment items are

⁹The military services report readiness on selected military equipment based upon mission capable or operational readiness rates.

¹⁰The Quadrennial Defense Review is a comprehensive internal review of its forces, resources, and programs that DOD performs every 4 years. The next review is scheduled to be completed in February 2006.

addressed, DOD risks a continued decline in readiness trends, which could threaten its ability to continue meeting mission requirements.

The military services have not fully identified near- and long-term program strategies and funding plans to ensure that all of the 30 selected equipment items can meet defense requirements. For the 30 selected equipment items, we found that some of the services' near- and long-term program strategies have gaps, and we rated them as red or yellow, as shown in figure 1, depending on the severity of the problem and how soon it needs to be addressed. Our analysis found, in some cases the services' near-term program strategies do not address capability shortfalls, full funding is not included in DOD's 2006 budget request, or there are supply and maintenance issues that may affect near-term readiness. For example, the Marine Corp's CH-46E Sea Knight helicopter was rated red because the service may not be able to meet near-term requirements because of potential aircraft and parts shortages caused by the age of the aircraft. Additionally, the long-term program strategies and funding plans are incomplete for some of the equipment items we reviewed in that future requirements are not fully identified, studies are not completed, funding for maintenance and technological upgrades may not be available, or replacement systems were delayed or not yet identified. For example, the Army's Bradley Fighting Vehicle received a red rating because the Army has not fully identified the future requirements and funding for this item. Services' near-term program strategies to sustain or modernize equipment and address current condition issues include "resetting" or "reconstituting" (i.e., restoring) equipment back to its predeployment status, remanufacturing or recapitalizing equipment, procuring new equipment, improving equipment through safety or technological upgrades, or improving maintenance practices. Services' long-term program strategies include improving the equipment through more complex maintenance or upgrades, or replacing the equipment with newer, more modern equipment, including those associated with DOD's force structure changes. Title 10 U.S.C. § 2437 requires the military services to develop sustainment plans for equipment items when their replacement programs begin development, unless they will reach initial operating capability before October 2008. Many of our selected military equipment items are not currently covered by this law because their replacement systems have either not begun development or will reach operational capability before October 2008. As a result, DOD is not required to report sustainment plans for these critical items. Most of the equipment items rated red and warranting immediate attention because of long-term planning and funding issues were not covered by this act. For the next several years, funding to sustain or

modernize aging equipment will have to compete for funding with other DOD priorities, such as current operations, force structure changes, and replacement system acquisitions. Without sufficient plans that provide for sustaining and modernizing all key equipment systems through the end of their expected useful lives and without identifying the risks associated with not fully funding or developing sustainment plans, DOD may be unable to meet future requirements for defense capabilities. Furthermore, until DOD develops these plans, Congress is unable to track the progress of equipment sustainment and modernization, or provide effective oversight.

We are recommending that the Secretary of Defense, in consultation with the secretaries of the military services, reassess the near- and long-term program strategies for sustaining and modernizing key equipment to ensure that the plans for those items that are needed to meet future defense capabilities, particularly those items not covered by 10 U.S.C. § 2437, are complete and will ensure that DOD can sustain the equipment until it reaches the end of its serviceable life or a replacement system is fielded. We are further recommending that the Secretary of Defense provide this information in a report to Congress, at the same time the department submits its annual budget request, to ensure that Congress has the visibility it needs to provide effective oversight over DOD's program strategies.

In commenting on a draft of this report, the department partially concurred with our first recommendation but did not agree that it should report their plans to Congress. Therefore, we are also suggesting that the Congress require the Secretary of Defense to report on program strategies and funding plans to ensure that DOD's budget decisions address deficiencies related to key military equipment. DOD's comments and our evaluation are discussed in detail in a later section of this report.

Background

The September 2001 Quadrennial Defense Review outlined a strategy to sustain and transform the military force structure that had been in place since the mid-1990s. In that review, DOD committed to selectively recapitalize older equipment items, which the department recognized as being neglected for too long, to meet near-term challenges and to improve near-term readiness. DOD is currently conducting a new Quadrennial Defense Review, with the report scheduled to be issued in February 2006. The results of this Quadrennial Defense Review could identify changes to DOD's future force structure and capabilities, thereby impacting the funding needed for both current and replacement systems.

Based on DOD guidance, the services develop a Program Objective Memorandum that details the specific programs and funding needed to meet DOD requirements as determined by the Quadrennial Defense Review. As part of this process, the services analyze alternative force structure, weapons systems, and support systems together with their multiyear resource implications and evaluate various trade-off options. Basically, it is a process for balancing and integrating resources among the various programs according to service and DOD priorities.

The annual FYDP contains DOD's estimates of future funding needs for programs and priorities. Through the FYDP, DOD projects costs for each element of those programs through a period of either 5 or 6 years on the basis of proposals made by each of the military services. The Office of the Secretary of Defense considers the service proposals and the policy choices made by the current administration and, where needed, makes adjustments. For example, in preparing its 2006 budget, DOD made a number of significant changes in its long-term acquisition plans to meet budget targets established by the White House, as documented in Program Budget Decision 753. The 2005 FYDP extended from fiscal year 2005 to fiscal year 2009 and the 2006 FYDP extended from fiscal year 2006 to fiscal year 2011.

Condition of Some Selected Equipment Has Been Degraded by the High Pace of Operations and the Advanced Age or Complexity of the Systems

While the condition of the 30 equipment items¹¹ we reviewed varied, we found that average fleet-wide readiness rates for most of these items declined between fiscal years 1999 and 2004. The decline in readiness generally resulted from the high pace of recent operations and the advanced age or complexity of the equipment systems. Therefore, we rated the fleet-wide condition of 22 of the selected equipment items as red or yellow. However, 8 of the 30 items—including several tactical fighter aircraft and some newer equipment items such as the Marine Corps' Medium Tactical Vehicle Replacement—were assessed as green (see fig. 1), indicating that we found no specific problems that warrant additional attention by DOD, the services, or Congress or that problems were already being addressed. DOD is currently conducting a Quadrennial Defense Review that will examine defense programs and policies and may change some equipment requirements.

¹¹Appendix II contains our detailed assessments for each of the 30 equipment items.

Eighteen of the equipment items we reviewed for this report were also included in our December 2003 report, and 12 of these equipment items received the same condition assessment in both analyses.¹² For example, the surface ships examined in this study, the Navy's DDG-51 Arleigh Burke Class Destroyer, the FFG-7 Oliver Hazard Perry Class Frigate, and the LPD-4 Amphibious Transport Dock Ship received yellow condition ratings in both studies, as did the Air Force's B-2 Spirit Bomber, the C-5 Galaxy Transport Aircraft, and the KC-135 Stratotanker Aircraft. However, for 6 of the items, the assessment changed—3 systems' fleet-wide condition improved, 2 going from red to yellow and 1 from yellow to green, and 3 systems' condition degraded, going from green to yellow. The condition assessments for the Marine Corps' CH-46E helicopter and the Navy's F/A-18 aircraft and Standard Missile-2 improved due, in part, to additional maintenance efforts and improvements that appear to address the condition concerns noted in our previous report. The condition assessments for the Army's Abrams tank and Heavy Expanded Mobility Tactical Truck and the Marine Corps' Light Armored Vehicle went from green to yellow largely as a result of increased use in ongoing operations overseas.

Some Selected Equipment Items Have Significant Condition Issues that Warrant Additional Attention by DOD, the Military Services, and/or Congress

For many of the equipment items included in our assessment, average fleet-wide readiness rates have declined, generally due to the high pace of recent operations or the advanced age or complexity of the systems. We assessed the fleet-wide condition of 3 equipment items as red, indicating that immediate attention is warranted by DOD, the services, and/or Congress to address problems or issues. In addition, we assessed the fleet-wide condition of 19 items as yellow, indicating that attention is warranted to address existing problems that, if left unattended, may worsen. Table 1 below shows the primary reasons used to rate selected equipment items' condition and our assessment of those items as either red or yellow.

¹²The only question that appeared in both reports concerned the condition of equipment. In the earlier report, strategy and funding were assessed separately. See GAO-04-112.

Table 1: Primary Reasons for Rating Condition as Yellow or Red for Selected Equipment Items

Reason	Yellow rating	Red rating
High pace of operations increasing utilization beyond planned usage	<p>Army</p> <ul style="list-style-type: none"> • Abrams Tank • Bradley Fighting Vehicle • Heavy Expanded Mobility Tactical Truck • AH-64A/D Apache Helicopter <p>Marine Corps</p> <ul style="list-style-type: none"> • Light Armored Vehicle • Assault Amphibian Vehicle • AV-8B Harrier Jet • AH-1W Super Cobra Helicopter • CH-46E Sea Knight Helicopter • CH-53E Super Stallion Helicopter 	<p>Army</p> <ul style="list-style-type: none"> • CH-47D/F Chinook Helicopter <p>Marine Corps</p> <ul style="list-style-type: none"> • M1A1 Abrams Tank
Maintenance issues resulting from the advancing ages and complexity of the equipment items	<p>Navy</p> <ul style="list-style-type: none"> • DDG-51 Arleigh Burke Class Destroyer • FFG-7 Oliver Hazard Perry Class Frigate • LPD-4 Amphibious Transport Dock Ship • EA-6B Prowler Aircraft • Standard Missile-2 <p>Air Force</p> <ul style="list-style-type: none"> • B-1 Lancer Bomber • B-2 Spirit Bomber • C-5 Galaxy Transport Aircraft • KC-135 Stratotanker Aircraft 	<p>Navy</p> <ul style="list-style-type: none"> • P-3 Orion Aircraft

Source: GAO analysis of military service data.

High Pace of Operations Increasing Utilization Beyond Planned Usage

Although selected equipment items have been able to meet wartime requirements, the high pace of recent operations appears to be taking a toll on selected equipment items and fleet-wide mission capable rates have been below service targets, particularly in the Army and Marine Corps. Further, according to officials, the full extent of the equipment items' degradation will not be known until a complete inspection of deployed equipment is performed. Elevated flying hours in Iraq and Afghanistan, coupled with the harsh desert environment, have negatively impacted helicopters. For example, our assessment of the Army's CH-47D/F Chinook helicopter's condition as red reflects this platform's mission capable rates, which were consistently below service goals. Officials stated that the aircraft is currently being flown in Iraq and Afghanistan at three times more than planned peacetime rates. This usage has increased the amount of maintenance and number of parts needed to sustain the aircraft, which in turn has negatively impacted overall readiness. Ground equipment has also

been affected by high wartime usage. For example, the Marine Corps' M1A1 Abrams tank fleet, also rated as red for condition, is being negatively impacted by operations in Iraq and a shortage of equipment maintainers due to transfers of personnel to units that are deploying. This system failed to meet its service readiness goals and recent trends indicate a steady decline away from these targets.

Several heavily used equipment items included in our review did not have mission capable rates below their target; however, these rates have recently declined, primarily due to the high wartime usage. For example, while the Army's Abrams Tanks and Bradley Fighting Vehicles met or exceeded the Army mission capable goals, they are both on a downward trend due to a shortage of spare parts and trained technicians. The shortage of spare parts is driven by the number of vehicles either deployed or being reset to a predeployment condition and the shortage of trained technicians is primarily due to the number of deployed National Guard military technicians. Both of these tracked vehicles have experienced high use in operations overseas in the past and will likely do so in the future. Similarly, while the readiness rates of the Marine Corps' Assault Amphibian Vehicle varied by vehicle type in recent years, the gap between mission capable rates and service goals increased, indicating a decline in the material condition of this equipment.

Maintenance Issues Resulting from the Advancing Ages and Complexity of the Equipment Items

While not all of the equipment included in our review has been heavily used in recent overseas operations, in some cases, the advanced age or complexity of the equipment items have contributed to readiness declines. Many of the selected systems have either a fleet-wide average age of more than 20 years, such as the Navy's LPD-4 Amphibious Transport Dock Ship, or entered the inventory prior to the 1980s, such as the Air Force's KC-135 Stratotanker aircraft. These systems are likely to reach the end of their useful lives in this decade unless major modernizations, some of which are planned or underway, are made. Some of the problems degrading the fleet-wide condition of these aging systems include maintenance problems due to parts shortages or obsolescence, shortages of trained maintenance personnel, corrosion, deferred maintenance, and airframe fatigue. For example, the Navy's P-3 Orion aircraft, while not as heavily tasked as Army and Marine Corps helicopters, have played an important role in overseas operations as a reconnaissance and surveillance asset despite consistently missing their mission capable goals by a significant percentage. The condition of the P-3 fleet, which has an average age of over 24 years, has been primarily degraded by the effects of structural fatigue on its airframe

and the obsolescence of communication, navigation, and primary war-fighting systems in this aircraft.

Some Air Force equipment also has age-related condition issues that warrant attention and therefore received yellow ratings. For example, mission capable rates for the C-5 Galaxy Transport Aircraft were consistently below Air Force goals between fiscal years 1999 and 2004. Officials stated that the size and age of the C-5 aircraft make it maintenance intensive, and that component items on the aircraft are older, making it difficult to find manufacturing sources for some parts, particularly avionics and engine components. In addition, the KC-135 Stratotanker aircraft has not met its mission capable goals due to issues associated with age and corrosion, such as problems with the landing gear's steel brakes.

Similarly, Navy surface ships examined in this study had a number of issues related to condition and these vessels also received yellow ratings. The Navy is challenged to maintain surface ships that are, in reality, a system of systems. The failure of any one of these complex systems affects the entire ship. For example, the DDG-51 Arleigh Burke Class Destroyer, the FFG-7 Oliver Hazard Perry Class Frigate and the LPD-4 Amphibious Transport Dock Ship all had problematic subsystems, for example, operating with limited communication ability or bandwidth, which affects their day-to-day operations such as on-line training and personnel activities. Older ships, such as the FFG-7 class which is, on average, almost 21 years old and the LPD-4 class with an average age of 37 years, may be more challenging because as the ships age, more maintenance will be required. Other older Navy equipment also had condition issues in need of attention. For example, the EA-6B Prowler consistently missed the Navy's mission capable goal due to problems with communications equipment and wings.

Some Selected Equipment Items Are in Favorable Condition

Our analysis showed that the fleet-wide condition of over one quarter of the equipment items included in our review was generally favorable, and consequently, we assessed the condition of 8 of the 30 selected military equipment items as green, as shown in figure 1. Not all equipment has been heavily used for operations in Iraq and Afghanistan, and for some items, use has not increased significantly from that of planned peacetime operations. This was the case for several tactical fighter aircraft. In our assessment, all three selected aircraft that provide this capability, the Air Force's F-15 Eagle/Strike Eagle and F-16 Fighting Falcon, and the Navy's F/A-18 Hornet/Super Hornet, were at or near- service mission capable rate goals.

Moreover, we found that new equipment that has been heavily tasked in recent operations appears to be performing well. For example, the Family of Medium Tactical Vehicles has exceeded the Army's fully mission capable rate goals despite operating overseas at a rate that is nine times higher than in peacetime. In addition, the Marine Corps' Medium Tactical Vehicle Replacement vehicles are being aggressively used in support of operations in Iraq, but also met their mission capable goals for fiscal years 2003 and 2004. These trucks are both relatively new; the Family of Medium Tactical Vehicles is on average 6 years old and the Medium Tactical Vehicle Replacement is on average 3 years old.

In addition, we assessed the fleet-wide condition of some older equipment items favorably. For example, the average age of the Army's OH-58D Kiowa is about 13 years with a life expectancy of 20 years; however, these reconnaissance helicopters have met or exceeded their mission capable goals from 1999 through 2004 while exceeding their planned flight hours in recent operations. With an average age of almost 16 years, the M113 Armored Personnel Carrier has not experienced a significant decline in mission readiness as a result of recent operations in Iraq and Afghanistan. The Army's High Mobility Multi-Purpose Wheeled Vehicles (HMMWV) are experiencing usage (i.e., operational tempo)¹³ that is six times their normal peacetime rate. Despite concerns over the availability of their armored protection,¹⁴ these vehicles exceeded Army readiness goals for the past 6 years and received a green rating.

Services Near- and Long-Term Program Strategies and Funding Plans Exist for Most Equipment Reviewed, but Some Gaps Remain

The military services have identified near- and long-term program strategies and funding plans to ensure that most of the 30 selected equipment items can meet defense requirements, but some gaps remain. For the 30 selected equipment items, we found that 20 of the services' near-term program strategies have gaps in that they do not address capability shortfalls, full funding is not included in DOD's 2006 budget request, or there are supply and maintenance issues that may affect near-term readiness. Additionally, the long-term program strategies and funding plans are incomplete for 22 of the equipment items we reviewed in that future requirements are not fully identified, studies are not completed, funding for

¹³An operational tempo of 6:1 equates to putting 6,000 miles in a war-time 1-year period versus 1,000 miles under a normal peacetime operational tempo.

¹⁴In early 2005, officials stated that all vehicles entering Iraq would have armor.

maintenance and technological upgrades may not be available, or replacement systems are delayed or not yet identified. DOD is required to develop sustainment plans in 10 U.S.C. § 2437, but this statute only applies to 9 of the selected equipment items.¹⁵ Although the services have identified near- and long-term program strategies and funding for most of the equipment items we reviewed, the gaps we identified may threaten DOD's ability to meet some future capability requirements.

Services Have Not Fully Identified Near-Term Program Strategies and Funding Plans for Some Selected Equipment

The services have not fully identified near-term program strategies and funding plans for 20 of the 30 equipment items we reviewed, including 7 of the 9 selected items covered by 10 U.S.C. § 2437. One of the items that will not be covered by this statute, the Marine Corps' CH-46E Sea Knight helicopter, was the only item we assessed as red for its near-term program strategy and funding plan because it may be unable to meet its near-term requirements. We assessed the near-term program strategies and funding plans of 19 of the 30 equipment items in our review as yellow because the services' program strategies for sustaining equipment lack sufficient planning or full funding to meet near-term requirements. Alternatively, the services have planned program and funding strategies to correct equipment deficiencies or improve equipment capabilities and safety for 10 of the 30 equipment items in our review so that the equipment items can meet near-term requirements, so we assessed their near-term program strategies and funding plans as green as shown in figure 1. The services' near-term program strategies to sustain or modernize equipment and address current condition issues include restoring equipment back to its predeployment condition, remanufacturing or recapitalizing equipment, procuring new equipment, improving equipment through safety or technological upgrades, or improving maintenance practices. Table 2 below shows the primary reasons used to rate selected equipment items' near-term program strategies and funding plans and our assessment of those items as either red or yellow. Without developing complete near-term plans and identifying the associated funding needs to ensure that all key equipment items can be sustained and modernized—and assessing the risk involved if gaps in these strategies are not addressed—DOD may be unable to meet some future requirements for defense capabilities.

¹⁵This act applies or will soon apply to the following equipment items included in our review based upon the replacement system beginning development : Marine Corps' M1A1, Light Armored Vehicle, Assault Amphibian Vehicle, AV-8B Harrier jet, and CH-53E; the Navy's F/A-18, EA-6B, and P-3; and the Air Force's F-16.

Table 2: Primary Reasons for Rating Near-term Program Strategies and Funding Plans as Yellow or Red for Selected Equipment Items

Reason	Yellow rating	Red rating
Existing plans do not address capability shortfalls	<p>Marine Corps</p> <ul style="list-style-type: none"> • Assault Amphibian Vehicle <p>Navy</p> <ul style="list-style-type: none"> • FFG-7 Oliver Hazard Perry Class Frigate • LPD-4 Amphibious Transport Dock Ship • EA-6B Prowler Aircraft • P-3 Orion Aircraft 	
Strategy not fully funded in DOD's fiscal year 2006 budget	<p>Army</p> <ul style="list-style-type: none"> • Bradley Fighting Vehicle • M113 Armored Personnel Carrier • Heavy Expanded Mobility Tactical Truck • High Mobility Multi-Purpose Wheeled Vehicle • Family of Medium Tactical Vehicles <p>Marine Corps</p> <ul style="list-style-type: none"> • M1A1 Abrams Tank • Light Armored Vehicle • AH-1W Super Cobra Helicopter • CH-53E Super Stallion Helicopter 	
Anticipated parts shortages and maintenance issues	<p>Army</p> <ul style="list-style-type: none"> • Abrams Tank • CH-47D/F Chinook Helicopter <p>Navy</p> <ul style="list-style-type: none"> • F/A-18 Hornet/Super Hornet Aircraft <p>Air Force</p> <ul style="list-style-type: none"> • C-5 Galaxy Transport Aircraft • KC-135 Stratotanker Aircraft 	<p>Marine Corps</p> <ul style="list-style-type: none"> • CH-46E Sea Knight Helicopter

Source: GAO analysis of military service data.

Existing Near-Term Plans for Some Selected Equipment Items Do Not Address Capability Shortfalls

Some of the services' near-term program strategies do not address the issues that affect the condition of the equipment in the near-term, thus 5 of the 30 selected equipment items received a yellow rating as shown in table 2. For example, the Marine Corps identified a shortfall in the capability of the Assault Amphibian Vehicle to conduct parts of their war-fighting doctrine; however, instead of upgrading its capabilities, their plan is to return the capability of the vehicle to its original condition while they await its replacement. Although the Navy has a plan to correct serious LPD-4 Amphibious Transport Dock ship class deficiencies, those ships that are

within 5 years of decommissioning can, by law,¹⁶ only receive safety modifications, resulting in a wide variance in the condition of ships in the class. Furthermore, while the Navy is making structural inspections and repairs to ensure that there will be sufficient P-3 Orion aircraft to meet day-to-day requirements next year, they have not funded some improvements to communications and defense systems, which will continue to degrade the ability of this aircraft to fulfill all of its missions.

Some Near-Term Strategies Are Not Fully Funded in DOD's Fiscal Year 2006 Budget Request

The full funding requirements for nine of the Marine Corps and Army near-term strategies we reviewed were not included in DOD's fiscal year 2006 budget request; therefore, we rated these equipment items as yellow as shown in table 2. According to service officials, the services submit their budgets to DOD and the department has the authority to increase or decrease the service budgets based upon the perceived highest priority needs. As shown in table 3 below, the Marine Corps identified requirements that were not funded in DOD's 2006 budget request totaling \$314.7 million for four of its selected equipment items.

Table 3: Unfunded Requirements for Four Selected Marine Corps Equipment Items, Fiscal Year 2006 (dollars in millions)

Marine Corps equipment item	Unfunded requirements
M1A1 Abrams Tank	\$ 86.4
Light Armored Vehicle	113.0
AH-1W Super Cobra Helicopter	63.6
CH-53E Super Stallion Helicopter	51.7
Total	\$314.7

Source: DOD data.

The four equipment items for which the Marine Corps did not request funding are a concern because a capability or need that the service identified as a priority may not receive funding unless Congress intervenes. For example, the Marine Corps identified but did not request \$113 million in funding needed to complete the standardization of its older Light

¹⁶10 U.S.C. § 2241, note provides that, except for safety modifications, funds should not be used for the modification of an aircraft, weapon, ship, or other equipment that the military department concerned plans to retire or otherwise dispose of within 5 years after completion of the modification.

Armored Vehicles. The Marine Corps also identified funding shortages in its tank remanufacturing program for fiscal years 2006 and 2007, noting that only 33 percent of the plan has been funded.

In addition, for five of the selected Army items, DOD has not included funding for part of the near-term program strategies in its regular 2006 budget request. Instead the Army is relying on supplemental appropriations or congressional adjustments to their regular appropriations to fund these activities and we rated these items yellow given the uncertainty of future supplemental appropriations or congressional adjustments. For example, the Army requested \$1.4 billion in the fiscal year 2005 supplemental in order to accelerate recapitalization of the Bradley Fighting Vehicles by producing 93 vehicles to replace combat losses and 554 to meet its modernization needs, and has begun planning another request for supplemental appropriations to fund other near-term procurement requirements associated with their transformational objectives. Further, in the past, the Army has consistently relied on supplemental appropriations and congressional adjustments for the M113 Armored Personnel Carrier, and included \$132 million in the fiscal year 2005 supplemental funding request to recapitalize vehicles deployed for Operation Iraqi Freedom.

Anticipated Parts Shortages and Maintenance Issues May Affect Equipment Condition and Indicate Near-Term Planning and Funding Concerns

Anticipated parts shortages or maintenance issues may affect the services' ability to maintain adequate condition of 6 of the 30 selected equipment items we reviewed; therefore, we assessed their near-term program strategies and funding plans as yellow or, in one case, red as shown in table 2. Of the 30 equipment items we reviewed, the Marine Corps' CH-46E Sea Knight helicopter received a red rating for its near-term program strategy and funding plan because the service may be unable to meet its near-term requirements due to potential aircraft and repair parts shortages caused by the age of the aircraft. Because of fielding delays of its replacement aircraft, the MV-22, the CH-46E will not be retired as originally scheduled, which may lead to additional repair parts shortages. The uncertainty in whether the near-term program strategy addresses existing parts shortages is also a concern for items such as the Navy's F/A-18 Hornet/Super Hornet aircraft and resulted in a yellow rating. Although the Navy is currently able to maintain readiness for the Super Hornet fleet, there is an anticipated shortage for critical spare parts like extra fuel tanks and bomb racks, and the current program strategy does not fund the efforts necessary to ensure adequate replacements. Additionally, we rated the Air Force's KC-135 Stratotanker aircraft as yellow because officials expect its age-related maintenance issues, such as fuel bladder leaks and parts obsolescence, to increase, resulting in additional maintenance requirements. Officials also

stated that the severity of potential problems from newly discovered corrosion remains unknown, so the potential exists for additional maintenance requirements.

Some Selected Equipment Items Have No Near-Term Program Strategy or Funding Issues of Concern

We rated 10 of the 30 equipment items examined in this review as green, as shown in figure 1, because we did not identify any significant program or funding issues in the near term. The services had identified program and funding strategies to correct these equipment items' immediate deficiencies, or to improve the platforms' capabilities. For the selected equipment items that are being heavily used for operations in Iraq and Afghanistan and received a green rating, such as the Army's AH-64A/D Apache helicopter and the Marine Corps' AV-8B Harrier jet, the services are using a combination of activities, including restoring the equipment to predeployment status, remanufacturing or recapitalizing the equipment, or procuring new equipment. For example, the Army is restoring the Apache helicopters being used in combat while concurrently remanufacturing the older AH-64A variants into newer AH-64D variants. In some cases, the services have funded plans that upgrade the equipment items to address structural or safety concerns and improve combat capabilities, such as for the Air Force's F-15 and F-16 fighter aircraft and the Navy's DDG-51 Arleigh Burke Class destroyers. For other items, the services modified their maintenance practices to increase efficiencies and address concerns. For example, the Air Force modified its stealth maintenance procedures on its B-2 Spirit bomber, thus reducing the steps and time required to conduct it.

Services Lack Complete Long-Term Program Strategies and Funding Plans for Selected Equipment

The services have not developed or fully funded the long-term program strategies for 21 of the 30 selected equipment items. Title 10 U.S.C. § 2437, which requires that DOD develop sustainment plans, applies to only 9 of the selected equipment items. We assessed 7 of the selected equipment items as red, only 2 of which will be covered by this statute, because the services' program strategies and funding plans to meet long-term requirements are not fully identified, studies to determine future system requirements are not complete, funding for maintenance or technological upgrades may not be available, or replacement systems were delayed or not identified, and in some cases, the selected equipment items may be unable to meet their long-term requirements. We assessed the long-term program strategies and funding plans of 14 of the selected equipment items in our review as yellow because they are experiencing similar gaps in their long-term program strategies and funding plans, but the consequences would be less severe. Alternatively, we assessed the long-term program strategies and funding plans of 9 of the 30 equipment items in our review as

green, as shown in figure 1, because the services have program strategies and funding planned to improve or upgrade equipment capabilities and safety or replace the equipment items so that they can meet long-term requirements. Some of the services' long-term program strategies include improving or modernizing the equipment through upgrades, recapitalizing older models to newer ones, or replacing the equipment with newer, more modern equipment, including those associated with DOD's force structure changes.

Table 4 below shows the primary reasons used to rate selected equipment items' long-term program strategies and funding plans and our assessment of those items as either red or yellow. As with incomplete near-term strategies, without complete long-term plans to ensure that all key equipment items can be sustained and modernized—and assessing the risk involved if gaps in these strategies are not addressed—DOD may be unable to meet some future defense requirements.

Table 4: Primary Reasons for Rating Long-term Program Strategies and Funding Plans as Yellow or Red for Selected Equipment Items

Reason	Yellow rating	Red rating
Future strategy and funding requirements are not fully identified	Army <ul style="list-style-type: none"> • Heavy Expanded Mobility Tactical Truck • High Mobility Multi-purpose Wheeled Vehicle • Family of Medium Tactical Vehicles Marine Corps <ul style="list-style-type: none"> • M1A1 Abrams Tank • Light Armored Vehicle 	Army <ul style="list-style-type: none"> • Bradley Fighting Vehicle • M113 Armored Personnel Carrier
DOD awaiting studies needed to develop strategies	Air Force <ul style="list-style-type: none"> • C-5 Galaxy Transport Aircraft 	Air Force <ul style="list-style-type: none"> • KC-135 Stratotanker Aircraft
Availability of funding for maintenance and technological upgrades affecting strategies	Marine Corps <ul style="list-style-type: none"> • AH-1W Super Cobra Helicopter Navy <ul style="list-style-type: none"> • DDG-51 Arleigh Burke Class Destroyer • FFG-7 Oliver Hazard Perry Class Frigate • LPD-4 Amphibious Transport Dock Ship • EA-6B Prowler Aircraft 	Navy <ul style="list-style-type: none"> • P-3 Orion Aircraft • Standard Missile-2

(Continued From Previous Page)

Reason	Yellow rating	Red rating
Replacement systems are delayed or not identified	Marine Corps <ul style="list-style-type: none"> • Assault Amphibian Vehicle • AV-8B Harrier Jet Navy <ul style="list-style-type: none"> • F/A-18 Hornet/Super Hornet Aircraft 	Marine Corps <ul style="list-style-type: none"> • CH-46E Sea Knight Helicopter • CH-53E Super Stallion Helicopter

Source: GAO analysis of military service data.

Future Strategy and Funding Requirements Are Not Fully Identified

At this time, DOD has not fully identified the future requirements or the long-term funding needs for seven of our selected equipment items, resulting in red or yellow assessments as shown in table 4, depending on the urgency or severity of the gaps in program strategies or funding plans. The Army's lack of identified future requirements and funding plans led us to assess its Bradley Fighting Vehicle and M113 Armored Personnel Carrier as red. In some cases, follow-on system requirements have not been established, but the services have plans to sustain the items until the replacement system is available, so we assessed these items as yellow. For example, the Marine Corps plans to replace its M1A1 Abrams tank and Light Armored Vehicle with the Marine Air-Ground Task Force Expeditionary Force Fighting Vehicle, although at the time of our review, they had not completely identified the program requirements or funding needed for the replacement vehicle. However, they do have plans in place to ensure that both the M1A1 and Light Armored Vehicle are available until the Marine Air-Ground Task Force Expeditionary Force Fighting Vehicle is fielded and have received supplemental funding for these plans.

The Army recently finalized the strategy for its wheeled vehicles, such as the HMMWV, but some procurement and recapitalization plans have not been fully funded or specific actions or time frames were not included. Therefore, we assessed the three Army wheeled vehicles' long-term program strategies and funding plans as yellow. For example, we noted that the Army's Tactical Wheeled Vehicle and Trailer Modularity and Modernization Strategy showed anticipated procurements for the HMMWV that were not reflected in DOD's 2006 budget request. Further, while the strategy notes that future block upgrades for the Family of Medium Tactical Vehicles are planned and describes the sustainment programs it will include, it does not identify any specific actions or time frames for these upgrades.

DOD Awaiting Studies to Develop Strategies

DOD has not yet completed studies so that it can fully identify the program strategies and funding plans needed for 2 of the 30 selected equipment

items assessed in this review. As shown in table 4, we assessed the long-term program strategy and funding plan for the Air Force's KC-135 Stratotanker aircraft as red because the congressionally mandated study to determine its replacement has experienced, and may continue to experience delays. Meanwhile the KC-135 fleet, with an average age of about 44 years, continues to experience age-related problems and delays in fielding a replacement further exacerbate problems in maintaining the existing fleet over the long term. We assessed the long-term program strategy and funding plan for the Air Force's C-5 transport aircraft, with an average fleet age of about 26 years, as yellow because the Air Force remains uncertain about the size of the final C-5 fleet and whether to fund some additional C-5 aircraft upgrades while awaiting completion of DOD's Mobility Capabilities Study. This study is expected to be completed in the summer of 2005; however, at the time this report was issued, results were not available.

Availability of Funding for Maintenance and Technological Upgrades Affecting Strategies

The availability of funding for ongoing maintenance and technological upgrades in past and future years may affect the long-term program strategies and funding plans for seven of the selected equipment items. As shown in table 4, we assessed the long-term strategies and funding plans for two items, the Navy's P-3 Orion aircraft and the Standard Missile-2, as red because the limited funding for maintenance and technological upgrades may have serious consequences, such as negatively affecting their ability to meet war-fighting requirements. The Navy has identified a plan to address the obsolescence of the mission systems in the P-3 Orion aircraft over the long term, but at this time has not officially approved or funded this plan. In addition, the Standard Missile-2, which has recently seen improved readiness ratings because DOD increased operation and maintenance funding, is not scheduled for the same level of funding in the long term, which may reduce the number of available missiles.

DOD budget decisions to reduce funding for maintenance and upgrades have the potential for adversely affecting five items, so we assessed the long-term program strategies and funding plans for these items as yellow. For example, decreases in the Navy's planned operation and maintenance funding across all surface ships in the fleet may result in deferred maintenance and may adversely affect the future material condition of the three classes of ships included in this review, the DDG-51 Arleigh Burke Class destroyers, the FFG-7 Oliver Hazard Perry Class frigates, and the LPD-4 Amphibious Transport Dock ships.

Long-Term Program Strategies Affected Because Replacement Systems for Selected Equipment Are Delayed or Not Identified

Replacement systems have either been delayed or are not yet identified for 5 of the 30 selected equipment items examined in this review and we rated these items as red or yellow as shown in table 4. Two of these items were assessed as red because of the urgency and severity of the delays impact on the services' capabilities and ability to meet future requirements. For example, we assessed the long-term program strategy and funding plan for the Marine Corps' CH-53E Super Stallion Helicopters as red because the Marine Corps has not identified a replacement for the CH-53E Super Stallion despite an initial fielding planned for 2015. According to officials, the Marine Corps must maintain enough CH-53E helicopters to support Marine Corps operations until the initial fielding of the Heavy Lift Replacement aircraft. Officials estimate that, if the current high usage rate and expected attrition rates hold true, the number of CH-53E helicopters may fall below the number necessary to remain in service until the Heavy Lift Replacement becomes available.

The remaining three items' long-term program strategies and funding plans were assessed as yellow because the effect of the uncertainties or delays do not appear to be as urgent or severe. In some instances, delays and uncertainties affecting the sustainment programs of selected equipment items are related to DOD difficulties in acquiring their replacements. For example, uncertainty over the potential for delays in the Joint Strike Fighter Program affects the long-term strategy and funding for the Marine Corps' AV-8B Harrier jet and the Navy's F/A-18 fighter aircraft and these systems were rated yellow.¹⁷

Some Selected Equipment Items Have No Long-Term Program Strategy and Funding Issues of Concern

We determined that 9 of the 30 selected equipment items examined in this review have no significant program or funding issues in the long term and therefore received green ratings as shown in figure 1. For example, the Air Force's F-15 aircraft upgrades are fully funded and designed to keep the aircraft viable and functioning through at least 2025. In addition, the Marine Corps' plans provide sufficient numbers of Medium Tactical Vehicle Replacement vehicles to equip all of its units in the long term. Moreover, the Army has reprogrammed funds from the cancellation of the Comanche program to fund other aviation modernization strategies, including those

¹⁷GAO reviews over the past 30 years have found consistent problems with weapon acquisitions such as cost increases, schedule delays, and performance shortfalls. In our most recent study of these problems, GAO assessed 54 programs, including the Joint Strike Fighter, and found that the majority of the programs assessed are costing more and taking longer to develop. See, GAO, *Defense Acquisition: Assessment of Selected Major Weapons Programs*, GAO-05-301 (Washington, D.C.: March 2005).

that improve the capability and lifespan of the CH-47D/F Chinook and the AH-64A/D Apache helicopters.

Conclusions

Since our last review of the condition of selected military equipment in 2003, overall readiness rates for most selected equipment items have continued to decline and some of the services' near- and long-term program strategies lack complete sustainment and modernization plans or are not fully funded. Continued high use of these equipment items to support current operations and the advancing ages of the systems suggest that DOD will be challenged in meeting future equipment requirements without significant upgrades to its inventory. Furthermore, because activities to refurbish and replace vehicles, weapons, and equipment used for operations in Iraq and Afghanistan are being funded primarily through supplemental appropriations as opposed to being programmed in DOD's Future Years Defense Program, future funding is uncertain. Moreover, DOD faces challenges to sustain and modernize its current equipment while continuing these operations and transforming to a new force structure. DOD is currently conducting its Quadrennial Defense Review, which could change the future requirements for some military equipment. In light of these challenges, it is increasingly important that DOD focus its resources on the equipment items that are key to meeting future defense requirements. Without a more focused investment strategy, DOD runs the risk of a continued decline in future equipment readiness. While DOD is required to provide sustainment plans, including time frames and projected budgetary requirements, for some military equipment in accordance with 10 U.S.C. § 2437, this statute does not apply to many key military equipment items we reviewed. For example, those equipment items that do not have a replacement system in development are not covered by this statute. In fact, most of the equipment items that we assessed as red because of long-term strategy and funding issues were not covered by this statute. Without developing complete sustainment and modernization plans and identifying funding needs for all priority equipment items, including those not already covered by law through the end of their expected useful lives, DOD risks not being able to meet some future equipment requirements. Furthermore, without communicating these plans and funding needs to Congress, lawmakers will not have the clear picture of DOD's progress on equipment sustainment and modernization they need to provide effective oversight over these processes.

Recommendations

To ensure that DOD can sustain key equipment items to meet future equipment requirements and to provide greater visibility over key equipment items to Congress, we recommend that, after the department completes its Quadrennial Defense Review, the Secretary of Defense, in consultation with the Secretaries of the Military Services, take the following two actions:

- Reassess the near- and long-term program strategies for sustaining and modernizing key equipment, particularly those items not covered by 10 U.S.C. § 2437, to ensure that the plans are complete and that the items are sustainable until they reach the end of their serviceable life or a replacement system is fielded. Specifically, this reassessment should
 - detail the strategies to sustain and modernize key equipment systems until they are retired or replaced;
 - report the costs associated with the sustainment and modernization of key equipment and identify these funds in the Future Years Defense Program; and
 - identify the risks involved in delaying or not fully funding the strategies, and the steps the department is taking to mitigate the associated risks, for those strategies that are delayed or are not fully funded.
- Provide the information in the above recommendation to Congress at the same time the department submits its annual budget request, to ensure that Congress has the visibility it needs to provide effective oversight over DOD's program strategies.

Matter for Congressional Consideration

Congress should require the Secretary of Defense to report on program strategies and funding plans to ensure that DOD's budget decisions address deficiencies related to key military equipment. We suggest that this report be provided in conjunction with DOD's annual budget submissions and reflect the results of the department's Quadrennial Defense Review. Specifically, as stated in our recommendations, the report should (1) detail the strategies to sustain and modernize key equipment systems until they are retired or replaced; (2) report the costs associated with the sustainment and modernization of key equipment and identify these funds in the Future Years Defense Program and; (3) describe the risks involved in delaying or

not fully funding the strategies, and the steps the department is taking to mitigate the associated risks, for those strategies that are delayed or are not fully funded.

Agency Comments and Our Evaluation

In written comments on a draft of this report, DOD partially concurred with our recommendation that it should reassess the near and long-term program strategies for sustaining and modernizing key equipment after the department's Quadrennial Defense Review, but did not concur with our recommendation that the department report these plans to Congress. The department's written comments are reprinted in their entirety in appendix III.

In partially concurring with our first recommendation that it should reassess the near- and long-term program strategies for sustaining and modernizing key equipment, the department stated that, through its current budget processes, it is already executing an annual procedure to assess program strategies to ensure equipment sustainment and modernization that can support the most recent defense strategy. According to the department, these budget reviews consider strategies and costs to sustain and modernize equipment, and the risks incurred by not fully funding these strategies; therefore, the resulting budget reflects the department's best assessment of a balanced, fully funded budget that most efficiently accomplishes the national security mission within its limited resources.

While we acknowledge that these budget processes may provide a department-level review of what is needed to accomplish the national security mission, the department's budget processes and the Future Years Defense Program do not provide detailed strategies that include identifying both the costs associated with sustaining and maintaining key equipment and the risks involved in delaying or not fully funding the strategies. Without detailed plans, the department does not have sufficient information to ensure that adequate funding is provided or that it is taking the necessary steps to mitigate risks associated with strategies that are delayed or are not fully funded. We continue to believe that the department, in conjunction with the military services, needs to develop a more comprehensive and transparent approach for assessing the condition of key equipment items, developing program strategies to address critical equipment condition deficiencies, prioritizing the required funding, and mitigating risks associated with delaying or not fully funding these strategies upon completion of the Quadrennial Defense Review. Therefore, we continue to believe our recommendation has merit.

The department did not concur with our second recommendation that the Secretary of Defense provide detailed strategies and costs of sustaining key equipments items and the associated risks in delaying or not fully funding these strategies in an annual report to Congress to ensure that Congress has the visibility it needs to provide effective oversight over DOD's program strategies. DOD believes that submitting an additional report concurrent with the annual budget would be a duplication of effort.


We believe that the information included in the President's Budget does not provide Congress with sufficient information on the strategies, funding, and risks associated with maintaining key equipment items until their replacement systems are fielded. In our report, we identify a number of examples of inconsistencies between the program strategies and the funding needed to sustain and maintain key equipment items not reported in the department's budget documents. The department is not currently required to report sustainment plans for some of these critical items to Congress. We believe that Congress needs to be assured that DOD's budget decisions address deficiencies related to key military equipment that must be maintained and sustained until the end of their serviceable lives, including those currently not covered by Title 10 U.S.C§ 2437. Therefore, we have added a Matter for Congressional Consideration.

Lastly, DOD provided technical comments concerning our assessments of specific equipment items in appendix II. We reviewed and incorporated these technical comments, as appropriate. In some instances, the data the department provided in its technical comments resulted from program and funding decisions that were made subsequent to our review. In one case, we changed our original color-coded assessment of a key equipment item based on these decisions. The Army approved the replacement for the OH-58D Kiowa Helicopter, the Armed Reconnaissance Helicopter, and therefore we changed our original assessment of the Kiowa's long-term program strategy and funding plans from a yellow rating to a green rating.

We are sending copies of this report to the Secretary of Defense; the Secretaries of the Army, the Navy, and the Air Force; the Commandant of the Marine Corps; and other interested parties. We will also make copies available to others upon request. In addition, the report will be available at no charge on the GAO Web site at <http://www.gao.gov>.

If you or your staff have questions, please contact me on (202) 512-8365 or by e-mail at solisw@gao.gov. Contact points for our Offices of

Congressional Relations and Public Affairs may be found on the last page of this report. Major contributors to this report are included in appendix IV.

A handwritten signature in black ink, appearing to read 'W. Solis', with a long horizontal flourish extending to the right.

William M. Solis
Director, Defense Capabilities and Management

List of Congressional Committees

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

The Honorable Ted Stevens
Chairman
The Honorable Daniel K. Inouye
Ranking Minority Member
Subcommittee on Defense
Committee on Appropriations
United States Senate

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

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

Scope and Methodology

To update congressional committees on key equipment items that warrant immediate attention by the Department of Defense (DOD) and/or Congress, we conducted an analysis of 30 selected military equipment items. We performed an independent evaluation of the (1) condition of key equipment items and (2) services' near- and long-term program strategies and funding for the sustainment, modernization, or replacement of these equipment items.




This report follows our December 2003 report¹ which assessed the condition, program strategy, funding, and wartime capability of 25 selected military equipment items. The current report increases the number of equipment items to 30, and instead evaluates the condition, near-term program strategy and funding plans, and long-term program strategy and funding plans of each system. These changes reflect the current operational environment, and the critical linkage between a successful program strategy and funding. We examined the near and long terms separately to delineate the impact of current operations on the near term and their possible effect on long-term transformational efforts.

To select the 30 equipment items we reviewed, we included 18 of the equipment items reviewed in our December 2003 report, and based upon input from the military services, your offices, and our prior work, we judgmentally selected an additional 12 items. We did not include 7 of the 25 items from our previous review so that we could focus on other selected systems that we believed were more in need of examination. Our final selections included those items that the military services believed were most critical to their missions, and which have been in use for a number of years. The 30 equipment items include 9 from the Army, 6 from the Air Force, 7 from the Navy, and 8 from the Marine Corps. Our observations and assessments were made on active duty inventory as well as equipment in the National Guard and reserve forces; including reserve equipment represents another difference between this review and our December 2003 report. Our assessments apply only to the 30 equipment items we reviewed, and the results of our assessments cannot be projected to the entire inventory of DOD equipment. Because Section 805 of the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005—which amends Title 10 of the U.S. code (Pub. L. No. 108-375, § 805.)—does not apply to existing systems for which a replacement system will reach initial

¹GAO, *Military Readiness: DOD Needs to Reassess Program Strategy, Funding Priorities, and Risks for Selected Equipment*, GAO-04-112 (Washington, D.C.: Dec. 19, 2003).

operational capability before October 1, 2008, we did not assess compliance with this section of the act.

Each equipment item was assessed individually on its condition, and near- and long-term program strategy and funding. To determine which equipment items require additional attention by the department, the military services, and/or Congress, we developed an assessment framework based on three criteria: (1) the extent of the existence of a problem or issue, (2) the severity of the problem or issue, and (3) how soon the problem or issue needs to be addressed. To indicate the existence, severity, or urgency of problems identified for the 30 selected equipment items, we used a traffic light approach—red, yellow, or green—as follows:

-  Red indicates a problem or issue that is prevalent and severe enough to warrant immediate attention by DOD, the military services, and/or Congress.
-  Yellow indicates the existence of a problem or issue that warrants attention by DOD, the military services, and/or Congress, and that if left unattended may worsen.
-  Green indicates that we did not identify any specific problems or issues at the time of our review, or that any existing problems or issues we identified are either not severe enough in nature to warrant immediate action, or already being addressed by DOD, the military services, and/or Congress.

Individual assessments were based on systematic decisions with clear and, wherever possible, measurable criteria. Input from relevant officials—program managers, unit staffs, operators, maintainers, and engineers—was incorporated in every step of the process.

We interviewed officials from components (active, guard, and reserve forces) of all four of the military services, two selected combatant commands, and several major service commands. We visited selected units and maintenance facilities to observe the equipment items during operation or under maintenance. We also discussed deployed and nondeployed equipment condition, program strategy, and funding with program managers and equipment operators and maintainers, and included these indicators where appropriate. The specific military activities we visited or obtained information from include the following:

- Office of the Assistant Secretary of Defense, Reserve Affairs, Arlington, Va.;
- U.S. Air Force, Air Combat Command, Langley Air Force Base, Va.;
- U.S. Air Force, Air Mobility Command, Scott Air Force Base, Ill.;
- U.S. Air Force Materiel Command, Wright Patterson Air Force Base, Ohio;
- U.S. Air Force, Ogden Air Logistics Center, Hill Air Force Base, Utah;
- U.S. Air Force, Oklahoma City Air Logistics Center, Tinker Air Force Base, Okla.;
- U.S. Air Force, Pacific Command, Hickam Air Force Base, Hawaii;
- U.S. Air Force, Plans and Programs, Air Force Headquarters, Arlington, Va.;
- U.S. Air Force Reserve Command, Robins Air Force Base, Ga.;
- U.S. Air Force, Warner Robins Air Logistics Center, Robins Air Force Base, Ga.;
- U.S. Air National Guard, Headquarters, Andrews Air Force Base, Md.;
- U.S. Air National Guard, Hickam Air Force Base, Hawaii;
- U.S. Army, Headquarters, Arlington, Va.;
- U.S. Army National Guard, Headquarters, Arlington, Va.;
- U.S. Army National Guard, 81st Brigade, Washington National Guard, Camp Murray, Wash.;
- U.S. Army National Guard, Hawaii National Guard, Ft. Ruger, Hawaii;
- U.S. Army, Anniston Army Depot, Anniston, Ala.;
- U.S. Army Aviation and Missile Command, Redstone Arsenal, Ala.;

- U.S. Army, Corpus Christi Army Depot, Corpus Christi, Tex.;
- U.S. Army, Directorate of Logistics, Fort Lewis, Wash.;
- U.S. Army, First Army, Ft. Gillem, Ga.;
- U.S. Army, Fifth Army, Ft. Hood, Tex.;
- U.S. Army Forces Command, Ft. McPherson, Ga.;
- U.S. Army, 4th Infantry Division, Ft. Hood, Tex.;
- U.S. Army Headquarters, Arlington, Va.;
- U.S. Army Material Command, Ft. Belvoir, Va.;
- U.S. Army, Pacific, Ft. Shafter, Hawaii;
- U.S. Army Reserve Command, Ft. McPherson, Ga.;
- U.S. Army Tank – Automotive and Armaments Command, Warren, Mich.;
- U.S. Army, III Corps, Ft. Hood, Tex.;
- U.S. Central Command, McDill Air Force Base, Tampa, Fla.;
- U.S. Marine Corps, Aviation Plans, Policies, Programs, Budgets, Joint and External Matters Branch, Arlington, Va.;
- U.S. Marine Corps, Aviation Weapons Systems Requirements Branch, Pentagon, Arlington, Va.;
- U.S. Marine Corps, Installations and Logistics, Navy Annex, Arlington, Va.;
- U.S. Marine Corps, Logistics Plans, Policies and Strategic Mobility Division, Navy Annex, Arlington, Va.;
- U.S. Marine Corps, 3rd Marine Air Wing, Miramar, Calif.;

- U.S. Marine Corps, I Marine Expeditionary Force, Camp Pendleton, Calif.;
- U.S. Marine Corps, Marine Forces Pacific, Camp Smith, Hawaii;
- U.S. Marine Corps, Marine Forces Atlantic Command, Norfolk, Va.;
- U.S. Marine Corps, Naval Air Systems Command, Naval Air Station, Patuxent River, Md.;
- U.S. Marine Corps, Programs and Resources, Office of the Deputy Commandant, Pentagon, Arlington, Va.;
- U.S. Marine Corps, Reserve Command, New Orleans, La.;
- U.S. Marine Corps Systems Command, Quantico, Va.;
- U.S. Marine Corps, Army Tank Automotive and Armaments Command, Warren, Mich.;
- U.S. Navy, Commander Fleet Forces Command, Norfolk, Va.;
- U.S. Navy, Commander Electronic Attack Wing, Pacific, Whidbey Island, Wash.;
- U.S. Navy, Commander Patrol and Reconnaissance Wing 10, Whidbey, Island, Wash.;
- U.S. Navy, Commander Strike Fighter Wing, Atlantic, Virginia Beach, Va.;
- U.S. Navy, Commander Strike Fighter Wing, Pacific, Lemoore, Calif.;
- U.S. Navy, Commander, U.S. Pacific Fleet, Pearl Harbor, Hawaii;
- U.S. Navy, Headquarters, Washington, D.C.;
- U.S. Navy, Naval Air Systems Depot, Jacksonville, Fla.;
- U.S. Navy, Naval Air Systems Depot, North Island, Coronado, Calif.;
- U.S. Navy, Naval Air Systems Command, Patuxent River, Md.;

- U.S. Naval Reserve Command, New Orleans, La.;
- U.S. Navy, Naval Sea Systems Command Washington, D.C.;
- U.S. Navy, Naval Surface Force/US Naval Air Force—Atlantic, Norfolk, Va.;
- U.S. Navy, Naval Surface Force/US Naval Air Force—Pacific, San Diego, Calif.;
- U.S. Navy, Naval Weapons Station, Seal Beach, Calif.; and
- U.S. Pacific Command, Camp Smith, Hawaii.

Assessments on the condition of these 30 equipment items were based on a comparison of readiness metrics against service goals, and the existence, severity, or urgency of condition problems. We obtained data on equipment age, expected service life, mission capable rates,² utilization rates,³ and various other metrics for fiscal years 1999 through 2004. Readiness metrics, such as material readiness rates and mission capable rates, were a primary component of our assessments. We were particularly cognizant not only of whether the equipment item met its readiness goals but, if it failed to meet this metric, we examined the gap between the readiness achieved by these equipment items and the services readiness objectives—and the significance of that difference. Equipment items were further evaluated against metrics such as utilization rates, cannibalization rates, failure rates, and depot maintenance data. We gauged the significance of the rates and data as they reflected on the item’s condition. Further, this analysis also evaluated the extent to which each of the equipment items is being used for current operations, and their performance while deployed. Finally, we assessed specific problems with each item that may or may not have been captured in other metrics.

Our evaluations of DOD’s near- and long-term program strategy and funding plans were based on the existence of near- and long-term plans, and the extent to which there were gaps in funding for these plans as projected in

²Mission capable rates are measures of material condition that indicate the equipment can perform at least one and potentially all of its designated missions.

³Utilization rates refer to flying hours, tank miles, and steaming days.

DOD's Future Years Defense Program (FYDP).⁴ Both near- and long-term plans include sustainment, modernization, or recapitalization of the equipment items in order to meet mission requirements.⁵ Near-term plans are those that address current condition problems, as well as those projected until 2007; long-term plans address issues anticipated from 2008 until the replacement system enters the inventory or until the system reaches the end of its expected service life. We first assessed whether near- and long-term plans were realistic and comprehensive. For our short-term assessment, we examined whether the plans meet near-term requirements and address issues related to current condition and the need for near-term technological upgrades. For our long-term evaluation, we considered if modernizations or sustainment plans were sufficient given the timing of the replacement and the expected service life of the equipment item. Next, we determined the extent to which there were gaps in funding for both near- and long-term programs as projected in the FYDP. We then considered whether the strategy and its funding, in the near and long term, addressed other concerns which might significantly affect the program.

While we attempted to obtain consistent metrics for each of the three categories across all four of the military services, data availability varied significantly by service and type of equipment. Our assessments are based on the data available from multiple sources, and represent the problems and issues we identified at the specific point in time that we conducted our work. These can change quickly given current events. Although our assessments for each of the three categories—condition, near-term program strategies and funding plans, and long-term program strategies and funding plans—are largely qualitative in nature and are derived from consensus judgments, our analyses are based on data and information provided by the military services and discussions with military service officials and program managers for the individual equipment items. We assessed the reliability of the services' equipment readiness data by (1) comparing key data elements to our observations of equipment items at selected units, (2) reviewing relevant documents, and (3) interviewing knowledgeable officials. We determined that the data obtained from DOD, the military services, and the combatant commands were sufficiently reliable for our use. We performed our review from July 2004 through July

⁴The Future Years Defense Program reflects the department's official projection of the forces and resources needed to support the programs approved by the Secretary of Defense for the biennial budget years and the following 4 years.

⁵We did not independently verify or validate the requirements as part of this audit.

Appendix I
Scope and Methodology

2005 in accordance with generally accepted government auditing standards.

Assessments of Selected Equipment Items

For the 30 equipment items, each assessment provides the status of the equipment item at the time of our review. The profile presents a general description of the equipment item. Each assessment area—condition, near-term program strategy and funding, and long-term program strategy and funding—includes a green, yellow, or red rating indicating the existence, severity, or urgency of problems identified based on our observations of each equipment item, discussions with service officials, and reviews of service-provided metrics.

Army

Abrams M1A1/M1A2 Tank

First delivered in the early 1980s, the Abrams is the Army's main battle tank and destroys enemy forces using enhanced mobility and firepower. Variants of the Abrams include the M1,¹ M1A1, and M1A2 and there are a total of 5,848 tanks of all variants in the fleet. The M1A1 and M1A2 have a 120 mm main gun, a powerful turbine engine, and special armor. There are 5,109 M1A1 and M1A2 tanks in the inventory, and their estimated average age is 12 years. Officials state that in the future, the Army is planning to use only a two-variant fleet of the Abrams, consisting of the M1A1 Abrams Integrated Management and the upgraded M1A2 System Enhancement Program—the primary difference being the digital architecture of the System Enhancement Program variant. The M1 variant is expected to be phased out by 2015. The Abrams is expected to remain in the Army's inventory until at least 2045.

Figure 2: Abrams Main Battle Tank



Source: Defense Visual Information Center.

¹There are 739 M1 tanks in the Army's inventory averaging 20 years in age and they are found primarily in the National Guard. The M1 is similar to the M1A1 and M1A2 except that it possesses a 105 mm cannon and lacks the special armor protection. Due to its age and limited usage, our analysis did not include this variant.

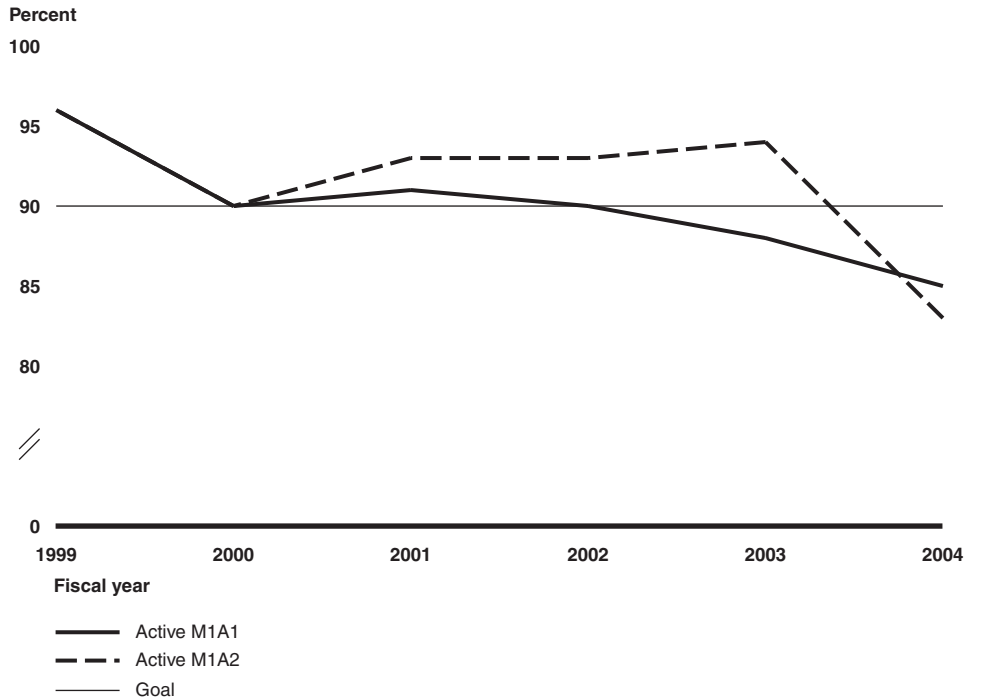
Condition



In our previous report we assessed the condition of the Abrams Tank as green because it consistently met its mission capable goal of 90 percent from fiscal year 1998 through fiscal year 2002.² However, in this review we assessed the condition of the Abrams Tank as yellow because, while it generally met or exceeded the Army's mission capable goal between fiscal years 1999 and 2003 as shown in figure 3 below, the rates declined between fiscal years 2003 and 2004. According to program officials, the recent downward trend is a result of parts and technician shortages. Officials stated that the shortage in parts is driven by the number of vehicles either deployed or being reset to a predeployment condition and the shortage of technicians is primarily due to the number of deployed National Guard military technicians. Additionally, as of September 2004 there were a relatively small percentage of Abrams tanks, around 5 percent, deployed in support of operations in Iraq. Due to the high use in theater, these operations may accelerate the aging process of the tank fleet.

²GAO, *Military Readiness: DOD Needs to Reassess Program Strategy, Funding Priorities, and Risks for Selected Equipment*, GAO-04-112 (Washington, D.C.: Dec. 19, 2003).

Figure 3: Average Mission Capable Rates for Army Abrams Tanks, Fiscal Years 1999 – 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy and funding for the Abrams tank as yellow because while the Army possesses plans for resetting tanks as they return from operations in Iraq and recapitalizing the fleet to ensure that the tank’s systems remain updated, they continue to identify shortages of repair parts and technicians as major causes of decreased material readiness. Without adequately addressing these issues, the condition of the Abrams fleet could be significantly impacted in the near term. Another potential issue affecting the Abrams in the near term is a break in the production line, which is being used to retrofit a lesser variant Abrams to the M1A2 System Enhancement Program, occurring in fiscal years 2006 and 2007. Army officials plan to mitigate this issue by providing \$40 million to maintain critical skills at the production facilities until production resumes in fiscal year 2008.

Long-Term Program Strategy and
Funding



We assessed the long-term program strategy and funding for the Abrams tank as green because the Army has identified a plan to reduce the current inventory of 5,109 to about 3,000 tanks in keeping with current Army transformation plans and has programmed funding to recapitalize the remaining fleet. The Army plans to move to a two-variant fleet of the Abrams, the M1A1 Abrams Integrated Management and M1A2 System Enhancement Program, which they plan to utilize until at least 2045. Officials believe this plan should reduce maintenance costs as the service will have reduced maintenance and logistics requirements from the current fleet arrangement. As noted in our previous report, the Army reduced the original number of recapitalized M1A2 System Enhancement Program tanks from 1,174 to 588. In the fiscal year 2006 President's Budget, the Army identified funding to increase the number of M1A2 System Enhancement Program tanks to 803. This increase realigns the recapitalization funding with the Army's upgrade schedule so that they are on target to meet their current transformation plans.

Bradley Fighting Vehicle

Brought into service in 1981, the Army uses the family of Bradley Fighting Vehicles to provide armored protection and transportation to infantry units. The Bradley is able to close with and destroy enemy forces in support of mounted and dismounted infantry and cavalry combat operations. The Bradley Fighting Vehicle family currently consists of two vehicles: the M2 Infantry Fighting Vehicle and the M3 Cavalry Fighting Vehicle. There are four variations of each of these two vehicles: the A0, A2, A2 Operation Desert Storm, and A3, each having different capabilities and technology. For example, the A3 variants possess all of the capabilities as the A2 variants, but utilize a digital architecture, which is compatible with the Army's net-centric warfare plans and the M1A2 System Enhancement Program Abrams tank. The Army currently maintains 6,583 M2 and M3 variants of the Bradley in their fleet and plans to use the Bradley Fighting Vehicle until at least 2045.

Figure 4: Bradley Fighting Vehicle



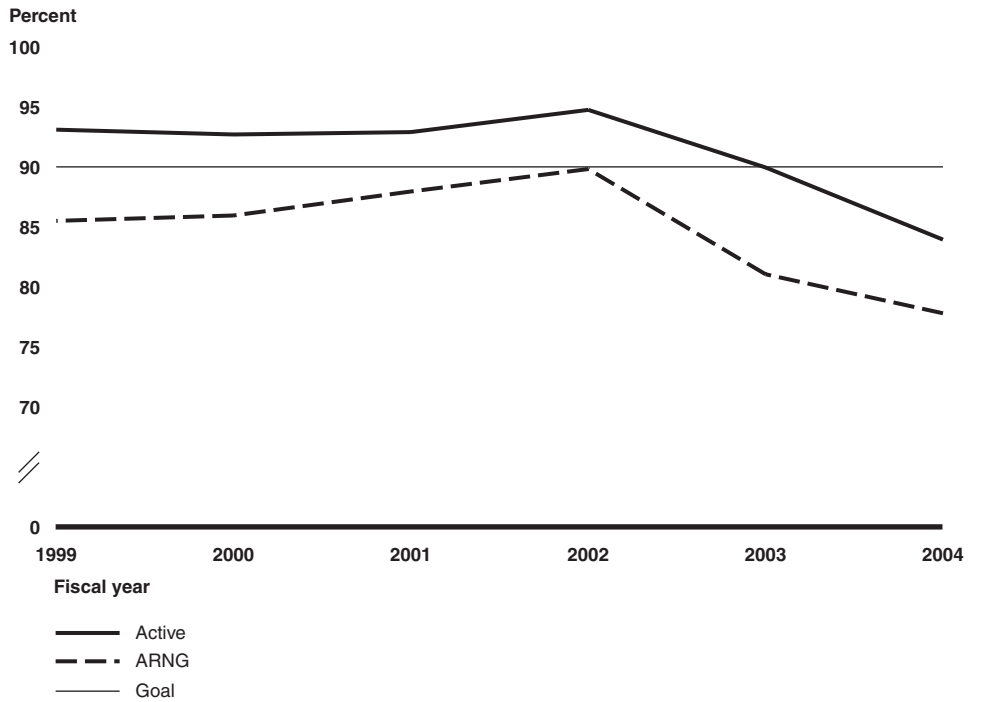
Source: Defense Visual Information Center.

Condition



We assessed the condition of the Bradley as yellow because, as shown in figure 5 below, the vehicles nearly met or exceeded the Army's readiness goal of 90 percent between fiscal years 1999 and 2002; however, the mission capable rates showed a downward trend between fiscal years 2002 and 2004. According to officials, Operation Iraqi Freedom demands and efforts to reset the vehicles to their predeployment status have had a significant impact on repair parts availability. The National Guard has experienced further difficulty with availability of trained maintainers due to the high pace of operations that has resulted in the need to transfer personnel among units to fill shortages. Additionally, program officials stated that the composition of the fleet of Bradley Fighting Vehicles is insufficient to meet all of the Army's current requirements, especially those associated with training and predeployment exercises. However, the Bradley vehicles are able to meet all of their operational requirements.

Figure 5: Average Mission Capable Rates for Army Bradley Fighting Vehicles, Fiscal Years 1999 – 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy and funding of the Bradley program as yellow because the Army does not currently possess a funding strategy through regular appropriations for developing the proper composition of the Bradley Fighting Vehicles fleet to meet the Army’s near-term transformation requirements. The Army requested \$1.4 billion in the fiscal year 2005 supplemental for the Bradley Fighting Vehicle in order to accelerate the recapitalization of vehicles by producing 93 vehicles to replace combat losses and 554 others for the Army’s modularity needs. Without having funding programmed for the A2 or the A3 variants of the Bradley, Army officials have begun planning for the fiscal year 2006 supplemental in order to fulfill Army transformation plans. Program officials stated that the Army is relying on supplemental funding and Office of the Secretary of Defense (OSD) reprogramming actions in order to meet equipment requirements for the Army’s transformation plans.

Long-Term Program Strategy and
Funding



We assessed the long-term program strategy and funding of the Bradley Fighting Vehicles as red because the Army plans to significantly increase the number of vehicles and change the composition of the fleet but has not established a long-term funding strategy. Officials stated that the Army plans to convert to a fleet of Bradley vehicles which will be aligned with the Abrams tank fleet. The A3, matched with the M1A2 System Enhancement Program tank, and a lesser variant, operating with the M1A1 Abrams Integrated Management tank, will make up the Army's future Brigade Combat Teams.³ Neither the A3 variant nor the lesser variants, which officials believe will be the A2 and the Operation Desert Storm variant, have long-term program funding identified.

M113 Armored Personnel
Carrier

The Army uses the M113 Armored Personnel Carrier in its primary mission of personnel transportation on the battlefield, though there are many other combat support missions for the family of vehicles, including command and control, cargo transportation, and battlefield obscuration. The Army originally introduced the M113 family of vehicles in 1960. The current fleet of M113A2 and A3 Personnel Carriers, totaling 7,579, has an average age of almost 16 years.⁴ Prior to operations in Iraq the Army planned to discontinue use of the M113; however, the Army now plans to utilize the M113 Armored Personnel Carrier through 2045 in accordance with its latest modularity plans. The A3 variant of the M113 has a digital architecture, increased suspension, and is capable of carrying add-on-armor kits to provide additional protection for the troops.

³Brigade Combat Teams are the foundation of the Army's new modularized force structure.

⁴There are approximately 15,785 vehicles that use the common M113 chassis. However, our analysis only focused on the M113A2 and A3 personnel carriers.

Figure 6: M113 Armored Personnel Carrier



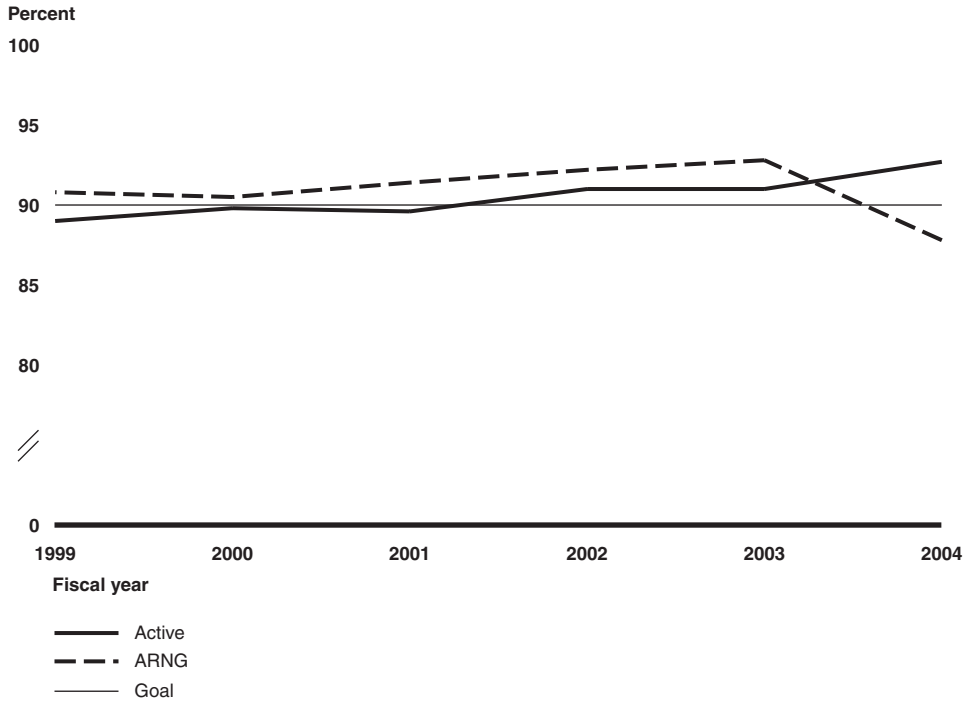
Source: GAO.

Condition



We assessed the condition of the M113 as green because, as shown in figure 7 below, the mission capable rates have been near the Army's goal of 90 percent between fiscal years 1999 and 2004. As of September 2004, the Army had 666 A2 and A3 variants in Operation Iraqi Freedom, or roughly 10 percent of the combined fleet. The M113 family of vehicles has not experienced a significant decline in mission readiness as a result of recent operations in Iraq and Afghanistan. The National Guard has generally maintained its M113 vehicles at a higher readiness rate than the active units of the Army.

Figure 7: Average Mission Capable Rates for Army M113 Vehicles, Fiscal Years 1999 – 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy and funding of the M113 as yellow because the Army has consistently relied on supplemental funding, congressional adjustments, and OSD reprogramming actions in order to complete modifications on the M113 family of vehicles. The Army requested \$132 million in DOD’s fiscal year 2005 supplemental funding request to Congress in order to recapitalize 368 M113s. This represents about 55 percent of the vehicles that were deployed to Operation Iraqi Freedom in September 2004. Due to its armor protection, the M113 has been used in place of less armored vehicles, such as High Mobility Multi-Purpose Wheeled Vehicles, in Operation Iraqi Freedom.

Long-Term Program Strategy and Funding



We assessed the long-term program strategy and funding for the M113 as red because the Army has not identified either a long-term procurement or maintenance strategy for the M113. The Army's funding strategy for the M113 family of vehicles has been impacted by the Army's plans to remove these vehicles from service. However, according to Army officials, the M113 family of vehicles will continue to play a significant role as the Army transitions into the new modular force.

Heavy Expanded Mobility Tactical Truck

The Heavy Expanded Mobility Tactical Truck (HEMTT) is used extensively to provide transport capabilities for resupply of the combat vehicles and weapons systems used by heavy combat forces and support units. The five basic HEMTT variants are used to transport ammunition, petroleum, oils and lubricants, and missile systems, and can also serve as a recovery vehicle for other vehicle systems. There are approximately 12,700 HEMTTs in the Army's inventory. The average age of the HEMTT fleet is about 15 years, and although the expected useful life is 20 years, the HEMTTs are expected to remain in the Army's inventory through 2030.

Figure 8: Heavy Expanded Mobility Tactical Truck



Source: Oshkosh Truck Corporation.

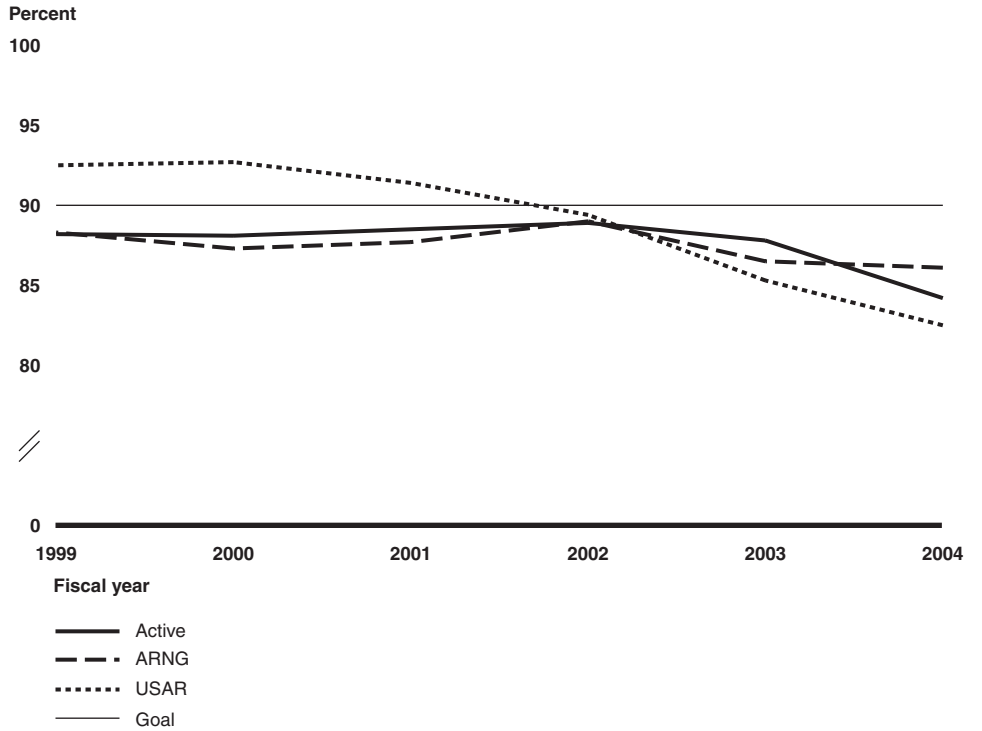
Condition



In our previous report we assessed the condition of the HEMTT as green because the mission capable rates were close to the Army's goal for fiscal years 1998 to 2002.⁵ However, in this review we assessed the condition as yellow. While the fully mission capable rates for the HEMTTs were near the Army's goal from fiscal years 1999 through 2003, the trend since fiscal year 2002 for both active and reserve components has been declining, as shown in figure 9 below. In one of the Army's fiscal year 2004 readiness reports to DOD, the high pace of operations and aging fleet were cited as factors affecting HEMTT readiness for the active component. The decline in readiness rates for the U.S. Army Reserves was attributed to the lack of maintenance technicians. Program management officials said that the failure to meet readiness goals was also due to parts problems. According to Army officials, approximately 12–15 percent of the HEMTT fleet is in theater and is being used at rates 10 times higher than during peacetime. In a February 2005 statement to congressional committees, Army officials stated that all wheeled vehicles being used in Iraq and Afghanistan would be armored by March 2005. Despite concerns over armor protection, Army officials that we visited stated that the HEMTTs have performed as intended in theater without any significant issues.

⁵GAO-04-112.

Figure 9: Average Fully Mission Capable Rates for Army HEMTTs, Fiscal Years 1999 – 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy for the HEMTT as yellow because the Army’s near-term strategy for sustaining, modernizing, and procuring HEMTTs has not been fully funded. In addition, the program received significant funding from supplemental appropriations and a congressional adjustment in fiscal years 2004 and 2005, the remanufacture and upgrade program has continued at a slower pace than planned, and at the time of the fiscal year 2006/2007 budget estimate submission, the impact of modularity changes on the final acquisition objective was still unknown. The Army’s Tactical Wheeled Vehicle and Trailer Modularity and

Modernization Strategy⁶ has been updated several times and has undergone significant changes. In addition, the strategy states that while investment is not sufficient to meet the Army's goals, it does address its most critical requirements. In fiscal year 2004 the family of heavy tactical vehicles, which includes the HEMTTs, was authorized an additional \$47 million in supplemental funding and another \$39 million in congressional adjustments and DOD's fiscal year 2005 supplemental funding request for \$74.3 million was to replace combat losses and procure additional vehicles to equip, backfill, and modularize various Army units. The Army is planning to include another request for additional HEMTTs in DOD's fiscal year 2006 supplemental budget request. The Extended Service Program, which the Army uses to remanufacture and upgrade existing HEMTTs, has continued at the slower pace noted in our December 2003 report,⁷ but the justification for an additional \$90.3 million included in the fiscal year 2005 supplemental funding request cited the program's importance to the Army's modularization efforts. Finally, while the Army's acquisition objective for HEMTTs has continued to increase, it still may not meet the Army's modularity requirements.

Long-Term Program Strategy and Funding



We assessed the long-term program strategy and funding for the HEMTT as yellow because the Tactical Wheeled Vehicle and Trailer Modularity and Modernization Strategy for both procurement and recapitalizations⁸ has not been fully funded and the Army's plans and funding for procurement, recapitalization, and sustainment of its oldest models are continuing to evolve. The strategy has been updated several times and has undergone significant changes. The June 2005 version of the strategy concluded with a statement that while investment is adequate to address the Army's most critical requirements, it still falls short of the Army's goals. In addition, the goals have changed significantly. For example, in the fiscal year 2006/2007 budget estimate, dated February 2005, the Army acquisition objective for

⁶The Army's Tactical Wheeled Vehicle and Trailer Modularity and Modernization Strategy lays out a comprehensive strategy for meeting modularity requirements and modernizing the current tactical wheeled vehicle fleet.

⁷GAO-04-112.

⁸The HEMTT Extended Service Program is a recapitalization program that supports modularity by remanufacturing and upgrading existing HEMTT vehicles.

HEMTTs was 14,269, but in July 2005 the goal was 17,850. Funding plans also continue to change. In our December 2003 report, we noted that the Army had reduced funding for the recapitalization program which was used to upgrade HEMTTs. Currently, the June 2005 version of the strategy shows that the Army plans to recapitalize 4,726 HEMTTs between fiscal years 2012 and 2018. However, past history shows that this may not occur. For example, while the fiscal year 2003 budget estimate shows that the Army originally planned to recapitalize 608 HEMTTs in fiscal year 2004, the fiscal year 2005 budget estimates show that only 129 were recapitalized. The Army's plans to eliminate its oldest HEMTT models, which can reduce fleet operating and support costs, have also been scaled down. In a fiscal year 2004 draft, the strategy stated that 9,200 of the oldest HEMTT models would be eliminated by fiscal year 2018. In a 2005 version however, that number was reduced to 7,728. In addition to receiving regular appropriations for procuring, recapitalizing, and sustaining HEMTTs, the Army is also relying on funds received through OSD's reprogramming actions to support its long-term strategy for HEMTTs. The June 2005 version of the Army's strategy shows that between fiscal years 2006 and 2011, an additional 3,559 HEMTTs and other heavy vehicles will be procured with funds received through OSD's reprogramming actions.

High Mobility Multi-Purpose Wheeled Vehicle

The High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) is a light, highly mobile, diesel-powered, four-wheel-drive vehicle that has six configurations: troop carrier, armament carrier, shelter carrier, ambulance, missile carrier, and Scout vehicle. There are approximately 120,000 HMMWVs in the Army's inventory. HMMWVs entered the Army's inventory in 1985. Currently, the average age of the HMMWV fleet is about 13 years and the expected service life of HMMWVs is 15 years. The HMMWV represents 50 percent of the Army's total tactical truck fleet.

Figure 10: High Mobility Multi-Purpose Wheeled Vehicle



Source: Defense Visual Information Center.

Condition

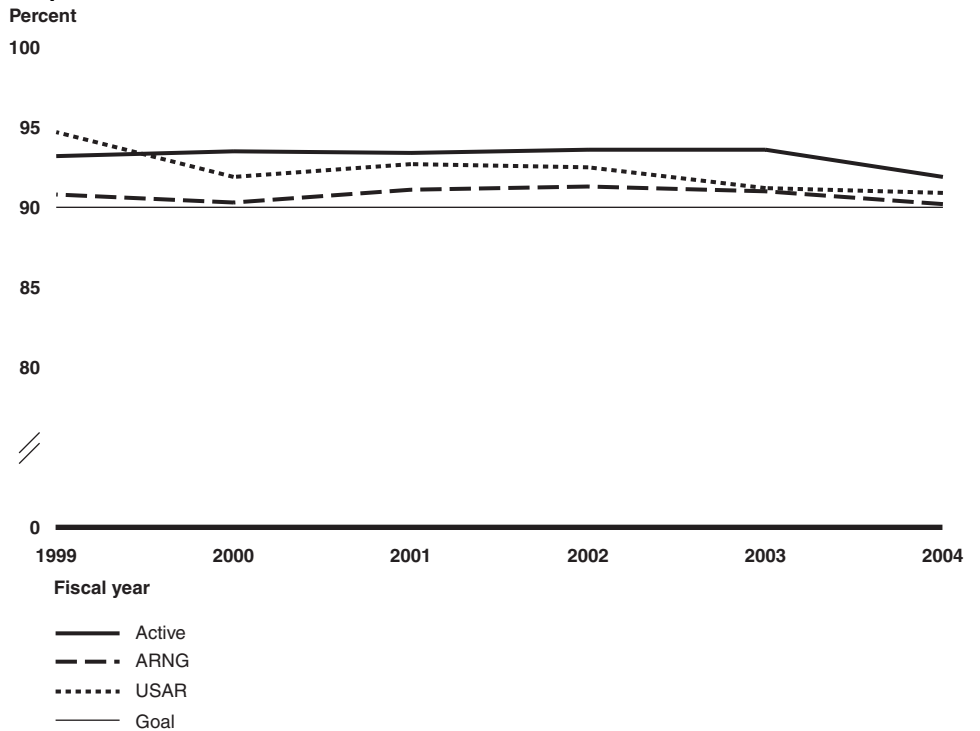


We assessed the condition of the HMMWV as green because, as shown in figure 11, it exceeded the Army's fully mission capable goal from fiscal years 1999 through 2004 for both the active and reserve components. However, Army officials noted that the HMMWVs supporting Operation Iraqi Freedom are experiencing usage (i.e., operational tempo)⁹ that is six times their normal peacetime usage rate. HMMWV production has now transitioned primarily to the Up-Armored platforms to enhance force protection and mobility for deployed units. While the Up-Armored variant is built to support the weight of the vehicle's armor, Army officials have expressed concern regarding the long-term impact from the stress placed on the frame, engines, and transmissions by the additional weight of add-on armor that the HMMWVs were not reinforced to handle. DOD has initiated

⁹An operational tempo of 6:1 equates to putting 6,000 miles in a wartime 1-year period versus 1,000 miles under a normal peacetime operational tempo.

a Stress Study to try and quantify the effects of high usage, additional weight, and harsh operating conditions on future maintenance/replacement needs of vehicles such as the HMMWV. In February 2005, in a statement to congressional committees, Army officials stated that all wheeled vehicles being used in Iraq and Afghanistan would be armored by March 2005.

Figure 11: Average Fully Mission Capable Rates for Army High Mobility Multi-Purpose Wheeled Vehicles, Fiscal Years 1999 – 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy and funding for the HMMWV as yellow because the Army has not fully funded its Tactical Wheeled Vehicle and Trailer Modularity and Modernization Strategy and the Army Acquisition Objective continues to change. In the near term, in addition to receiving regular appropriations, the Army has received additional funding for HMMWVs from supplemental appropriations and congressional

adjustments. In fiscal year 2004, the Army received \$239 million of supplemental funds and about \$39 million in congressional adjustments. In fiscal year 2005 the Army requested almost \$290 million in supplemental funds to procure HMMWVs to activate units and to supply existing units. An additional \$31 million in supplemental funds was requested to replace combat losses and another \$123 million was requested to begin recapitalizing older HMMWV models and converting them to newer models capable of accepting the add-on armor. The June 2005 version of the Army's strategy shows that it is planning to request additional supplemental funding in fiscal year 2006. The Army's Acquisition Objective for HMMWVs has increased significantly since 2001. In the Army's fiscal year 2002 amended budget estimate, submitted in June 2001, the Army's Acquisition Objective for HMMWVs was about 121,000 whereas in an April 2004 version of the Army's plan, the Army was projecting a need for 145,000 HMMWVs. Currently, neither the fiscal year 2006/2007 nor the June 2005 version of the Army's plan show the Army's Acquisition Objective for HMMWVs. Army officials noted in an August 2004 version of the strategy that they had resourced all known Global War on Terrorism (GWOT) requirements and their projected battle losses.

Long-Term Program Strategy and Funding



We assessed the long-term program strategy and funding for the HMMWV as yellow because again, the Army has not fully funded its Tactical Wheeled Vehicle and Trailer Modularity and Modernization Strategy. In addition, the Army's initial plans for the HMMWV recapitalization programs have been significantly reduced. The June 2005 version of the Army's strategy shows anticipated procurement requirements of about 30,000 vehicles between fiscal years 2008 and 2011. However, the Army's fiscal year 2006/2007 budget request is only for about 18,000 vehicles during those years. The Army is planning on using funds resulting from OSD reprogramming actions to procure the additional 12,000 vehicles needed to meet requirements for those fiscal years. In the long term, according to an August 2004 version of the strategy, the Army plans to eliminate about 45,000 of its oldest models by fiscal year 2018. About 19,000 of the oldest models would be converted to newer models capable of handling add-on armor kits in order to provide better soldier protection through a recapitalization program. However, those plans, and the associated costs, continue to change. For example, a February 2005 version of the strategy estimated a cost of about \$1.8 billion to recapitalize 20,114 HMMWVs for fiscal years 2008 through 2011, but the Army's fiscal

year 2006/2007 budget request, dated February 2005, contained about \$1.9 billion in order to recapitalize 17,694 vehicles during those years. The June 2005 version of the Army's plan shows an estimated cost of about \$2 billion to recapitalize 16,522 HMMWVs between fiscal years 2008 and 2011.

Family of Medium Tactical Vehicles

The Family of Medium Tactical Vehicles (FMTV) is a series of vehicles based on a common chassis which vary by payload and mission requirements. It is currently the only medium fleet vehicle that is in production with state-of-the-art technology. The FMTV includes the Light Medium Tactical Vehicle with a 2.5-ton capacity in both the cargo and van models and the Medium Tactical Vehicle with a 5-ton capacity in the cargo, tractor, wrecker, and dump truck models. The FMTV is the replacement for the obsolete and maintenance-intensive 2.5- and 5-ton trucks, some of which have been in the Army's inventory since the 1960s. The FMTV's missions include performing local and line hauling, unit resupply, and other missions in combat, combat support, and combat service support units. FMTVs are rapidly deployable and can operate in various terrains and in all climatic conditions. The commonality of parts across the various models is intended to reduce both the logistics burden and operating and support costs. The FMTVs entered the Army inventory in 1996 and currently there are approximately 19,400 vehicles with an average age of about 6 years. The average useful life is expected to be between 20 and 22 years.

Figure 12: 5-ton Family of Medium Tactical Vehicle



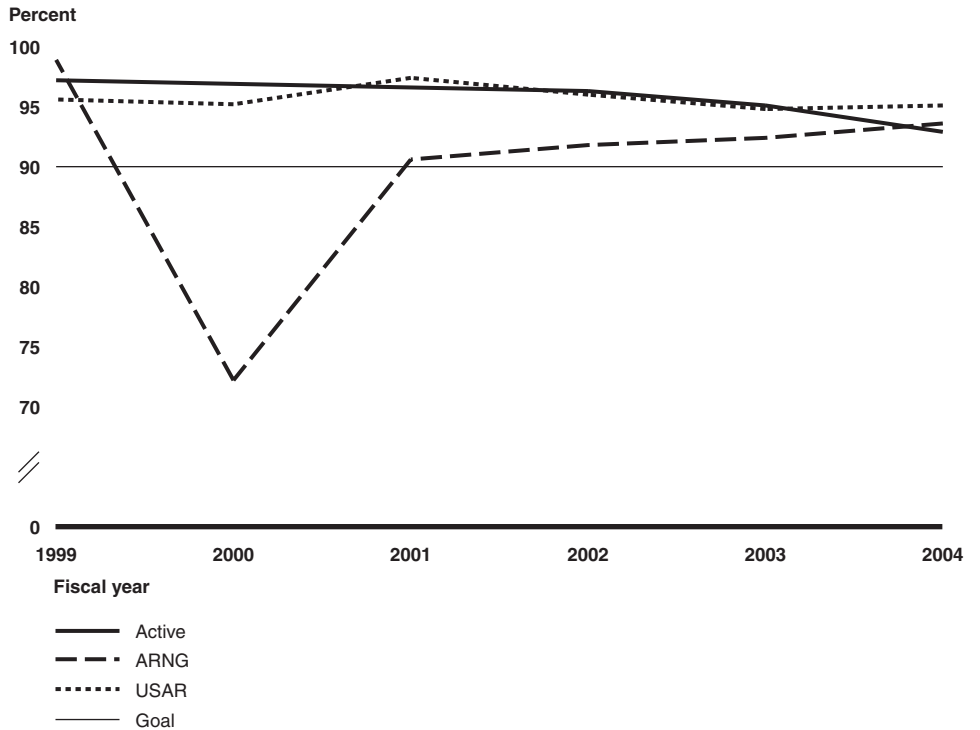
Source: U.S. Army.

Condition



We assessed the condition of the FMTV as green because, as shown in figure 13, it exceeded the Army's fully mission capable goal from fiscal years 1999 through 2004 for both the active and reserve components with the exception of the National Guard in fiscal year 2000. Despite operating during GWOT operations at a rate that is nine times higher than in peacetime, officials stated that the FMTVs are not experiencing any problems. However, in response to concerns about armored protection, Army officials, in a February 2005 statement to congressional committees, stated that all wheeled vehicles being used in Iraq and Afghanistan would be armored by March 2005.

Figure 13: Average Fully Mission Capable Rates for Army Family of Medium Tactical Vehicles, Fiscal Years 1999 – 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and
Funding



We assessed the near-term program strategy and funding for the FMTV as yellow because the Army's Tactical Wheeled Vehicle and Trailer Modularity and Modernization Strategy is not fully funded and states that although planned investment is adequate to address critical requirements, it still falls short of the Army's goals. According to an April 2004 version of the strategy, the Army did not consider it to be either cost or operationally effective to recapitalize older model vehicles. Instead, the Army's plan is to meet readiness and operational shortfalls through replacement with newer, technologically improved vehicles. However, this plan will not fill the Army's goals in the near term. For example, the fiscal year 2005 budget estimate states that procurement of FMTVs through fiscal year 2005 will only fill approximately 32 percent of the Army's Acquisition Objective for FMTVs. Funding for FMTVs in the near term relies on supplemental appropriations, congressional adjustments, and OSD reprogramming actions, in addition to regular appropriations. For example, in fiscal year 2004, the FMTV program was authorized about \$3.4 million from DOD's supplemental funding request and received another \$34 million as a congressional adjustment. DOD's fiscal year 2005 supplemental funding request included \$217 million for the Army to procure FMTV trucks to replace those lost in theater and to support modularity requirements. The Army also added an additional \$122.5 million in the fiscal year 2005 supplemental funding request to meet modularity requirements and to replace combat losses of the 2.5-ton FMTV vehicles. The June 2005 version of the plan shows that for fiscal year 2006, the Army is not planning to request supplemental funding, but in fiscal year 2007, they are planning to use additional funds received as a result of OSD reprogramming actions to procure additional FMTVs to fill unit shortfalls.

Long-Term Program Strategy and
Funding



We assessed the long-term program strategy and funding for the FMTV as yellow because again, the Army has not fully funded its Tactical Wheeled Vehicle and Trailer Modularity and Modernization Strategy and although an April 2004 version of the strategy states that an incremental upgrade modernization strategy that will include a combination of field modernizations and new procurement is envisioned, no specific actions or time frames are identified. The June 2005 version of the Army's plan shows that, between fiscal years 2008 and 2011, the Army is planning to continue

using OSD reprogrammed funds to procure FMTVs in order to fill unit shortfalls. In addition, the June 2005 plan shows that the Army plans to remove 25,000 of the old model 2.5-ton and 5-ton trucks from the inventory. FMTV production has been done in phases. As reported in an April 2004 version of the strategy, the first two phases together will deliver over 20,000 vehicles. The third phase is scheduled to begin in fiscal year 2005 and the fourth phase, an outgrowth of vehicle component design and integration under ongoing program technology/insertion efforts, does not have an identified start date but is planned to begin shortly after the completion of the current production contract.

AH-64 A/D Apache Helicopter

The Apache is a multimission aircraft designed to perform rear, close, deep operations and precision strikes, armed reconnaissance, and security during the day, at night, and in adverse weather conditions. There are two Apache variants: the AH-64A, which entered service in 1984, and the AH-64D Longbow, an improved version of the AH-64A, which entered service in 1998. The Army plans to convert most of the AH-64A helicopters into AH-64D models, and to improve the safety features on the remaining AH-64A models. In total, there are about 703 Apache helicopters in the Army's inventory: 263 A models and 440 D models. The average fleet age of the A model is about 13 years, and the average age of the D model fleet is about 4 years.

Figure 14: AH-64 Apache Helicopter



Source: Defense Visual Information Center.

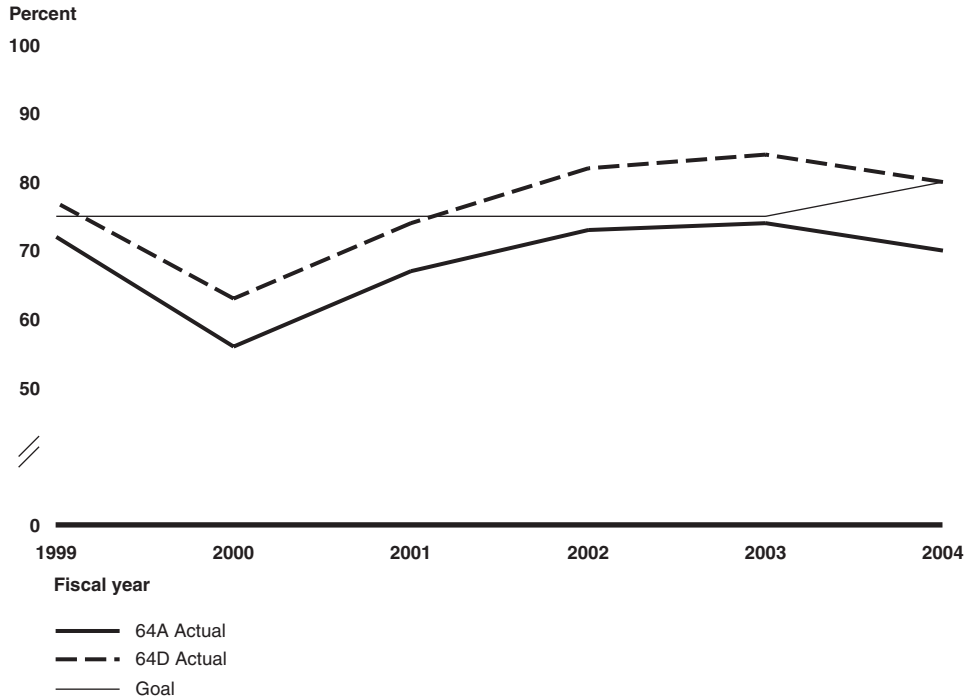
Condition



Our assessment of the Apache's condition as yellow is unchanged since our prior report. As shown in figure 15, the average mission capable rates for the AH-64A models have been below the Army's goal between fiscal years 1999 and 2004, and the average mission capable rates for the AH-64D fleet have been above goal for 3 of the 6 years. In our December 2003 report, safety restrictions were cited as the cause of not meeting mission capable goals but since then, all of the issues have been addressed throughout the fleet.¹⁰ However, according to officials, elevated flying hours in Iraq and Afghanistan, coupled with the harsh environment, continue to increase demands for limited spare parts and for maintenance for such items as engines and rotor blades. Officials further stated that the peacetime usage rate for the AH-64 is 15 hours a month and the actual number of flight hours is averaging 31 hours per month in Iraq and 55 per month in Afghanistan. Despite these challenges, officials stated that the AH-64 is capable of conducting its mission and, between February 2003 and December 2004, its mission capable rates in both Iraq and Afghanistan exceeded the Army's goal.

¹⁰The five restrictions identified in last year's report were aircraft Teflon bushings, transmissions, the main rotor blade attaching pins, generator power cables, and the auxiliary power unit clutch. The bushings, rotor blade attaching pins, and power cable issues have been resolved. The corrections for the transmission should be completed across the fleet by 2009 and the clutch should be completed in July 2005.

Figure 15: Fleet Average Mission Capable Rates for Army AH-64 A/D Apache Helicopters, Fiscal Years 1999 – 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy and funding for the Apache as green because the Army has recapitalization and sustainment strategies, both of which are funded. As stated in our December 2003 report, the Apache Recapitalization Program addresses cost, reliability, and safety problems, fleet groundings, aging aircraft, and obsolescence. The Army is continuing to remanufacture the AH-64A models to AH-64D models with the remaining helicopters beginning conversion during fiscal year 2005. In addition, Apaches that have been deployed are being returned to predeployment conditions through a combination of unit and contractor actions. The Army received an additional \$321.1 million in the fiscal year 2005 supplement to replace 13 Apaches that were lost in theater.

Long-Term Program Strategy and
Funding



We assessed the long-term program strategy and funding for the Apache as green because the Army's modernization strategy to improve combat capability and aircraft safety appears likely to allow the Apache to remain in service until 2040 and, as we reported previously, is consistent with the Army's stated requirements. A total of 597 AH-64A models will be converted to AH-64D models by fiscal year 2010. All remaining AH-64A models are scheduled to receive additional reliability and safety modifications as part of the Army's response to concerns of the Office of the Secretary of Defense and Congress. There are plans for additional upgrades to AH-64D models and funding to support the Army's current long-term strategy has been programmed through fiscal year 2020.

CH-47D/F Chinook
Helicopter

The CH-47 helicopter is a twin-engine, tandem rotor helicopter designed for transporting cargo, troops, and weapons, and is the only Army helicopter that can operate at high altitudes. By 1994, all CH-47 models were upgraded to the CH-47D version, which comprises the Army's heavy lift fleet. The CH-47D will be replaced by the CH-47F, a remanufactured version of the CH-47D with a new digital cockpit and modified airframe to reduce vibrations. The CH-47F was approved for full-scale production in November 2004, and officials state the Army plans to convert the entire fleet by fiscal year 2018. There are 395 CH-47D models and 3 CH-47F models in the Army inventory, but the CH-47F models are not assigned to units. The average age of the CH-47D model is about 17 years. Army aircraft generally have life cycles of 20 years.

Figure 16: CH-47D Chinook Helicopter



Source: Defense Visual Information Center.

Condition

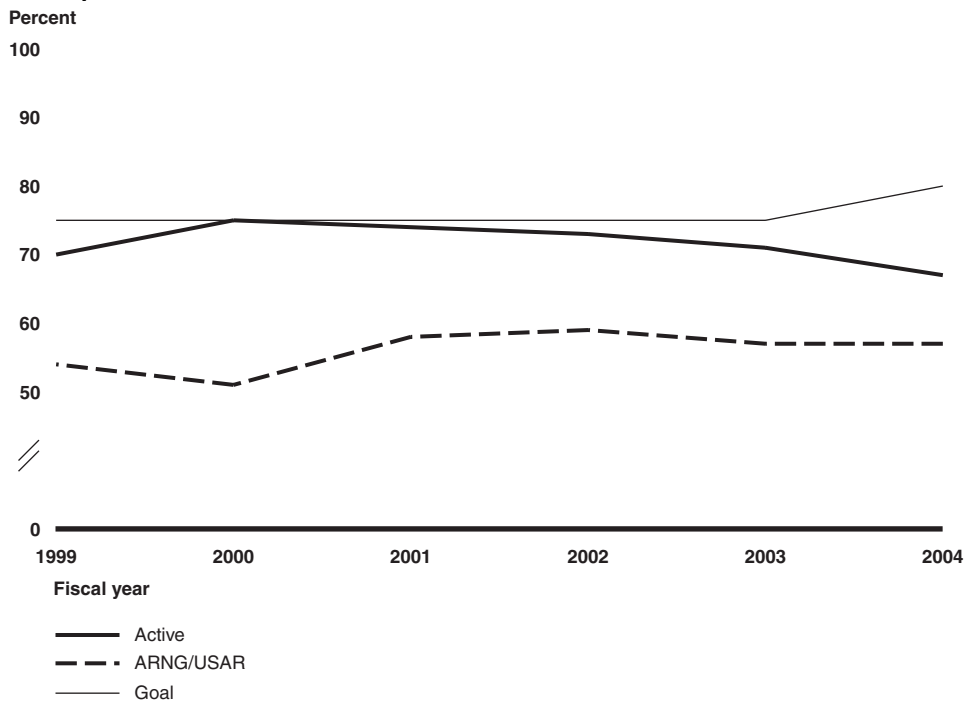


Our assessment of the CH-47D's condition as red is unchanged since our prior report.¹¹ Mission capable rates for the fleet, as shown in figure 17, were consistently below service goals for fiscal year 1999 through fiscal year 2004. Officials stated that the aircraft is currently being flown in Iraq and Afghanistan three times more than planned peacetime rates, with the CH-47D flying 200 hours in 6 months when it was originally planned to fly 200 hours in 18 months. Deployment cycles for the CH-47D are often longer than other equipment. While most Army helicopters remain in theater for about a year, officials report that some CH-47D helicopters have been in theater for almost 2 ½ years. This usage, particularly in a desert environment, has increased the amount of maintenance and number of parts needed to sustain the aircraft, which in turn has negatively impacted overall readiness. According to officials, current shortages of CH-47D helicopters and the requirement to fill nearly simultaneous competing priorities with limited resources may require additional CH-47D helicopters to remain in theater as stay-behind equipment. Despite these challenges, officials state that the CH-47D has proven itself in theater. For example,

¹¹GAO-04-112.

between February 2003 and December 2004 the CH-47D's mission capable rates in Afghanistan exceeded the Army's goal.

Figure 17: Fleet Average Mission Capable Rates for Army Chinook CH-47D/F Helicopters, Fiscal Years 1999 – 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy for the Chinook as yellow because the Army has plans to address the issues affecting the current condition but has yet to implement all of the solutions. Officials stated that the components that affect readiness the most can be repaired at the depot; however, the emphasis (e.g., transportation priorities) is on pushing parts to units but not necessarily returning the broken parts to the depot for repair. According to officials, the Army is working in coordination with depot personnel to become more efficient at identifying and returning the broken parts for repair, as well as developing relationships with original equipment manufacturers to allow for a faster replacement of spare parts.

However, whether these efforts will be successful and the degree to which they resolve parts shortages remains to be seen.

Long-Term Program Strategy and Funding



We assessed the long-term program strategy for the CH-47 as green because the Army has and is funding a modernization strategy to improve the CH-47 capability and lifespan. The Army plans to have a final CH-47F fleet size of 452 aircraft, to include 397 CH-47F aircraft that were remanufactured from the CH-47D and 55 new build CH-47F aircraft. Officials stated that conversion from the CH-47D to the CH-47F adds about 20 years to the service life of an aircraft, as well as improving performance and reducing overall operations and sustainment costs.

OH-58D Kiowa Helicopter

The Kiowa is a multimission armed reconnaissance helicopter designed to support combat and contingency operations. Deliveries of the OH-58D began in 1985, and the last new one was delivered to the Army in 1999. There are 354 Kiowa helicopters in the Army's inventory, and their average age is about 13 years. While the expected service life for an OH-58Ds is 20 years, the Army plans to retire the entire OH-58D fleet by fiscal year 2013 and to replace it with the Armed Reconnaissance Helicopter.

Figure 18: OH-58D Kiowa Helicopter



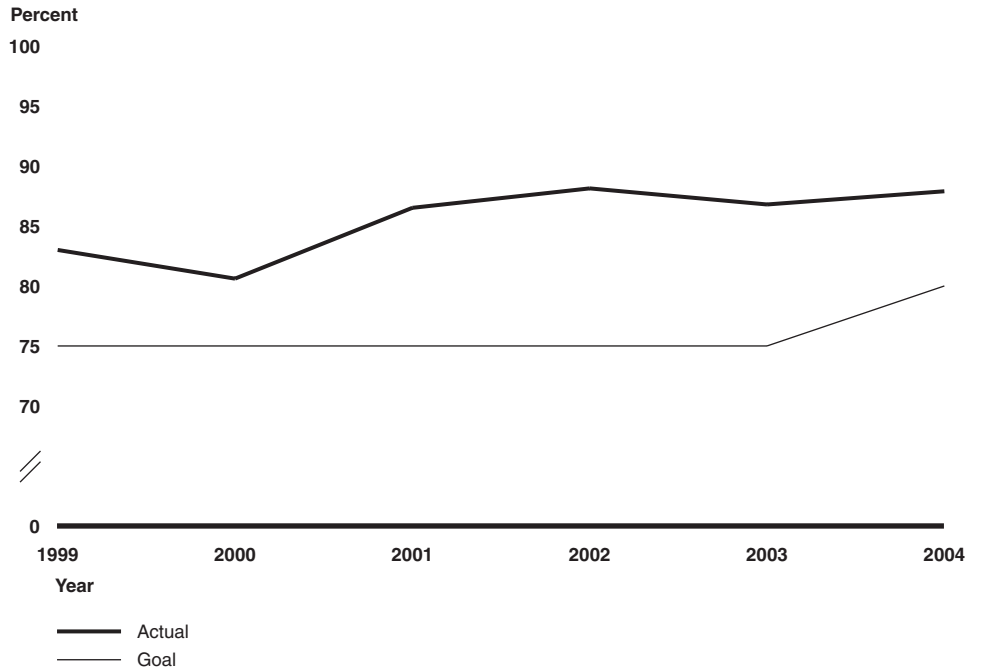
Source: Defense Visual Information Center.

Condition



We assessed the condition of the Kiowa as green because the mission capable rates have been consistently above service goals for calendar years 1999 through 2004. As seen in figure 19, the OH-58D has remained at or above the 80 percent mission capable rate. Further, 96 OH-58Ds have deployed to support operations in Iraq and Afghanistan and have exceeded their planned flight hours; specifically, peacetime average usage for the OH-58D is about 20 hours per month, but the actual flight hours for deployments has averaged between 80 and 100 hours per month. The Army attributes higher readiness rates of the OH-58D in part to simple design and a lighter airframe. For example, the OH-58D's mission capable rates in Iraq between February 2003 and December 2004 almost met the Army's goal. In addition, routine maintenance is performed on the Kiowa after every 40 hours of operation instead of the 300-400 hours for other aircraft, and the original equipment manufacturer, Bell Helicopter, conducts the depot-level repairs.

Figure 19: Fleet Average Mission Capable Rates for Army OH-58D Kiowa Helicopters, Calendar Years 1999 – 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy and funding for the OH-58D as green because the Army’s plans and funding will allow the aircraft to meet its requirements in the near term. The OH-58D reset and safety enhancement programs, which are fully funded, include safety enhancements, weight reduction, and other maintenance actions. Funding for the Kiowa since fiscal year 1999 has been near Army requests.¹² Additionally, due to the planned replacement of the Kiowa beginning in fiscal year 2008, public law limits funds that can be spent on the aircraft to

¹²Fiscal year 2003 funding authorizations were about 7 percent less than requested, and fiscal year 2004 funding authorizations were about 11 percent more than requested.

basic sustainment, maintenance and safety measures.¹³ For that reason Kiowa battle losses are not being replaced; however, according to the Army, the existing fleet is sufficient to meet requirements over the next 1–3 years, even at higher usage rates.

Long-Term Program Strategy and Funding



We assessed the long-term program strategy and funding for the Kiowa as green because the Army has a funded strategy to field its replacement, the Armed Reconnaissance Helicopter. According to the Army, this aircraft is a relatively inexpensive armed aerial platform that will integrate a commercial off the shelf aircraft with non-developmental mission equipment packages to the extent possible. The Army's acquisition objective is to have a fleet of 368 armed reconnaissance aircraft. The plan is for the Kiowa to be phased out of the Army's inventory beginning in fiscal year 2008 as the Armed Reconnaissance Helicopter is fielded.

¹³10 U.S.C. § 2241, note. This law provides that, except for safety modifications, funds should not be used for the modification of an aircraft, weapon, ship, or other equipment that the military department concerned plans to retire or otherwise dispose of within 5 years after completion of the modification.

Marine Corps

M1A1 Abrams Tank

First delivered to the Marine Corps at the beginning of Operation Desert Storm, the Abrams is the Marine Corps' main battle tank and destroys enemy forces using enhanced mobility and firepower provided by a powerful turbine engine and a 120 millimeter main gun. The Marine Corps possesses only one variant of the Abrams, the M1A1. The M1A1 variant fleet consists of a depleted uranium turret version and a "Plain Jane" version, which lacks the enhanced armor. There are 403 M1A1 tanks in the inventory, and the estimated average age is 16 years. The Marine Corps plans to use the M1A1 as its main battle tank until it is replaced by the Marine Air-Ground Task Force Expeditionary Family of Fighting Vehicles which is planned to be fielded in 2025.

Figure 20: M1A1 Abrams Tank



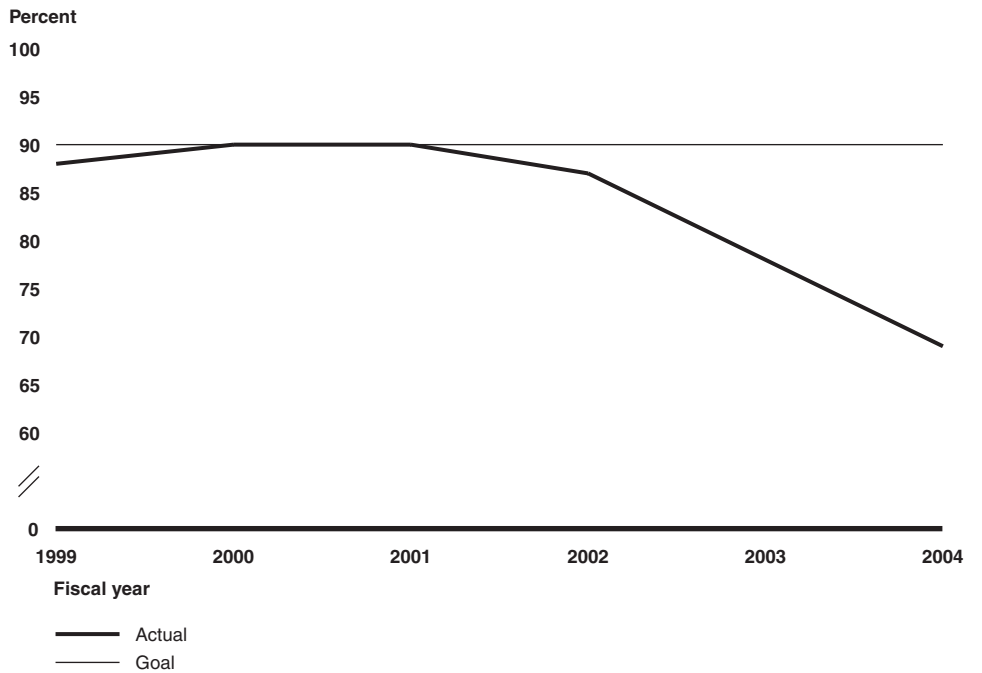
Source: Defense Visual Information Center.

Condition



We assessed the condition of the Abrams tank fleet as red because the Marine Corps has failed to meet its stated readiness goal of 90 percent on several occasions during the fiscal years 1999 to 2004 period and, as shown in figure 21, recent readiness trends indicate a steady decline away from the readiness goal. Marine Corps officials attribute the decline of the condition of the tank fleet to the demand on equipment as a result of operations in support of the Operation Iraqi Freedom and Marine Corps manpower levels. Since 2003, the Marine Corps has deployed tanks to Operation Iraqi Freedom, a theater where equipment has been used aggressively in rugged environments. Shortages of maintenance personnel are a result of the transfers of personnel to units that are deploying and unit staffing levels.

Figure 21: Average Material Readiness Rates for Marine Corps M1A1 Abrams Tanks, Fiscal Years 1999 – 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy and funding of the M1A1 Abrams tank fleet as yellow because the Marine Corps has not fully funded its tank remanufacture program and has identified additional unfunded priorities for fiscal year 2006. The Marine Corps is conducting a remanufacture program on the M1A1 tank that is intended to improve the quality of the existing equipment by applying all equipment modifications and replacing worn components. The Marine Corps has fully funded the remanufacture of 79 tanks during fiscal year 2005; however, it only identified funding for about 33 percent of the scheduled tank remanufactures during fiscal years 2006 and 2007. Marine officials believe that they will be able to meet all remanufacturing requirements because the tank program has identified similar funding requirement to Marine Corps Logistics Command in the past and has received sufficient funding to meet the remanufacture needs. The Marine Corps identified \$77 million in unfunded priorities for the Abrams program in fiscal year 2006. The majority of this amount, \$40 million, is to support continued depot maintenance operations and the remainder is to procure Firepower Enhancement Program suites, which increase the detection, recognition, and identification of targets.

Long-Term Program Strategy and Funding



We assessed the long-term program strategy and funding of the M1A1 Abrams tank fleet as yellow because the Marine Corps has not completely identified the program requirements or funding for its replacement system, the Marine Air-Ground Task Force Expeditionary Family of Fighting Vehicles; however, they are taking steps to increase the service life of the M1A1. The Marine Air-Ground Task Force Expeditionary Family of Fighting Vehicles is scheduled to be the replacement for the Abrams tank and other Marine Corps ground fighting systems. In order to extend the life of the current fleet of Abrams tanks, the Marine Corps has identified funding for 80 percent of the scheduled tank remanufactures during fiscal years 2008 and 2009. The Marine Corps has tentatively established plans to conduct a Service Life Extension Program for the M1A1 fleet in future years. As this program is to start in years beyond the current Future Years Defense Program budget, no funding has been identified currently. The Service Life Extension Program may be essential to ensure that the current fleet of Abrams tanks remains serviceable until the replacement vehicle is fielded.

Light Armored Vehicle – C2 and 25 Variants

The LAV-C2 Command and Control and the LAV-25 are two variants from the family of Light Armored Vehicles (LAV) that we included in our review. Both variants are all-terrain, all-weather vehicles with night capabilities and can be fully amphibious within 3 minutes. The LAV-C2 variant is a mobile command station providing field commanders with the necessary resources to command and control Light Armored Reconnaissance units. The average age of the LAV-C2 is 18 years and there are 50 in the inventory. The LAV-25 provides rapid maneuverability, armor protection, and firepower to the Light Armed Reconnaissance units. The average age of the LAV-25 is 19 years and there are 407 in the inventory. The family of Light Armored Vehicles is expected to be replaced by the Marine Air-Ground Task Force Expeditionary Family of Fighting Vehicles.

Figure 22: Light Armored Vehicle



Source: U.S. Marine Corps.

Condition

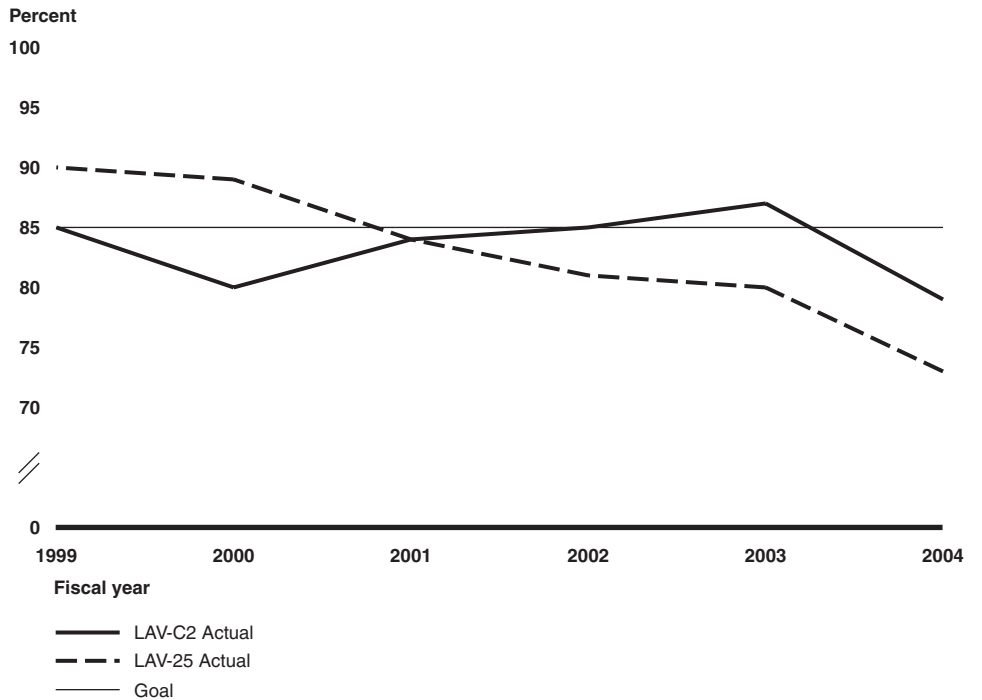


In our previous report we assessed the condition of the LAV-C2 as green because the Marine Corps had initiated a fleet-wide Service Life Extension Program to extend the service life of the vehicle.¹⁴ However, in this review

¹⁴GAO-04-112.

we assessed both the LAV-C2 and the LAV-25 variants of the Light Armored Vehicles and we assessed the condition of these vehicles as yellow. While the material readiness rates¹⁵ for the two variants were near the readiness goal of 85 percent between fiscal years 1999 and 2004 (see fig. 23); the overall material readiness rate trend declined during this period. Marine Corps officials stated that despite the fact that the vehicles did not meet the Marine Corps' readiness goal they were able to fulfill all mission requirements during this period. However, the vehicle's high usage in support of contingency operations has placed a strain on the supply system and has led to shortages of key Light Armored Vehicle components, such as struts and drive train components.

Figure 23: Average Material Readiness Rates for Marine Corps LAV-25 and LAV C-2, Fiscal Years 1999 – 2004



Source: GAO analysis of military service data.

¹⁵The material readiness rate reflects the operational capability of Marine Corps ground equipment and is comparable to mission capable rates.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy and funding of the Light Armored Vehicle as yellow because although a service life extension program and some upgrades are planned and funded, there are some essential program requirements that remain unfunded. A service life extension program designed to improve the quality and extend the life of the vehicles has already been performed on a majority of the vehicles. In addition to the service life extension program, the LAV-C2 and LAV-25 are planned to receive upgrades to address capabilities deficiencies. The upgrade to the LAV-C2 will enhance communications capabilities, affording more commonality with other vehicles and helicopter systems. The upgrade to the LAV-25 will enhance target recognition and the lethality upgrade will increase the fire power of the vehicle's 25-millimeter main gun. A program is also funded to address any obsolescence issues. Additionally, as a result of force structure changes, the Marine Corps is establishing five new light armored reconnaissance units and has received fiscal year 2005 supplemental appropriations to purchase new upgraded vehicles to equip these units and begin upgrades on the legacy fleet. However, the Marine Corps has identified \$113 million as an unfunded requirement that is needed to complete the standardization of the older LAVs.

Long-Term Program Strategy and Funding



We assessed the long-term program strategy and funding of the Light Armored Vehicle as yellow because while the Marine Corps has not completely identified the requirements for its replacement system or established associated program strategy or funding, the completion of the near-term plans may help the Marine Corps sustain its fleet of LAVs until the replacement is fielded. Both the LAV-C2 and the LAV-25 upgrades to address capabilities deficiencies have achieved or will achieve initial operational capability by fiscal year 2009.

Assault Amphibian Vehicle

Three variants represent the family of Assault Amphibian Vehicles (AAV). The AAVs are armored full-tracked landing vehicles. The Personnel variant carries troops from ship to shore and to inland objectives and there are 930 in the inventory. The C2 Command and Communications variant provides a mobile task force communication center in water operations

and from ship to shore and to inland areas and there are 76 in the inventory. The Recovery variant recovers similar or smaller sized vehicles. It also carries basic maintenance equipment to provide field support maintenance to vehicles in the field. There are 51 Recovery variants in the inventory. The average age of the vehicle is 28.6 years. All of the AAVs will be remanufactured under the Reliability, Availability and Maintainability/Rebuild to Standard upgrade program, which began in 1998 to lengthen the vehicle's expected service life. The fleet of AAVs is scheduled to be replaced by the Expeditionary Fighting Vehicle beginning in 2010.

Figure 24: Assault Amphibian Vehicle



Source: Defense Visual Information Center.

Condition

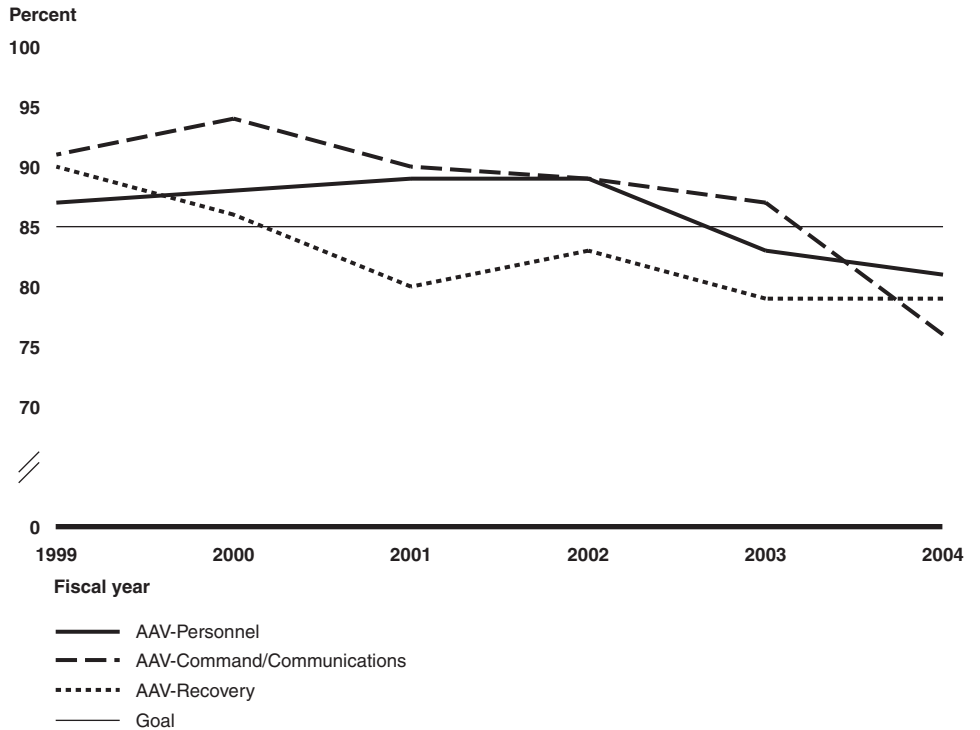


Our assessment of the condition of the AAV fleet as yellow is unchanged since our prior report.¹⁶ Although the fleet material readiness rates varied by vehicle type and by year, as shown in figure 25, the overall readiness trend for the fleet during the fiscal years 1999 to 2004 period declined.

¹⁶GAO-04-112.

Despite the declining material readiness, Marine Corps officials stated that the AAVs were able to meet all operational requirements. Wartime utilization rates for the vehicles in Operation Iraqi Freedom were as high as 11 times the normal peacetime rate.

Figure 25: Average Material Readiness Rates for Marine Corps Assault Amphibian Vehicles, Fiscal Years 1999 – 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the condition of the near-term program strategy and funding of the AAV fleet as yellow because while the Marine Corps is completing the Reliability, Availability, and Maintainability/Rebuild to Standard upgrade on all of the remaining 377 vehicles in its fleet, this upgrade only returns the vehicle to its original operating condition and does not add any upgraded capability. While Marine Corps officials stated that the vehicles have been able to perform all of their operational requirements, the AAVs lack some

capabilities in areas such as target acquisition (day and night) and land/water mobility, which are needed to carry out their warfighting doctrine—Operational Maneuver from the Sea. The Reliability, Availability, and Maintainability/Rebuild to Standard upgrade program for 327 of the 377 vehicles has been funded through regular Marine Corps procurement appropriations, supplemental appropriations, and congressional adjustments over the past few years. Funding for the conversion of the remaining 50 vehicles, plus 8 for future replacements of combat losses, was included in the fiscal year 2005 supplemental request. In addition to funding the upgrades, the requested procurement will also fund engineering changes to help sustain the AAV fleet and purchase add-on armor.

Long-Term Program Strategy and Funding



We assessed the long-term program strategy and funding of the AAV fleet as yellow because while the Marine Corps will have completed an extensive upgrade of the fleet with the Reliability, Availability, and Maintainability/Rebuild to Standard program, the timely fielding of the Expeditionary Fighting Vehicle remains in question. DOD reduced funding, thus delaying the initial fielding of the Expeditionary Fighting Vehicle to fiscal year 2010, 4 years past the original date. Operators and maintainers we spoke with are concerned about the delay because the Reliability, Availability, and Maintainability/Rebuild to Standard program is expected to help the AAV fleet serve until the Expeditionary Fighting Vehicle is fully fielded, but the current rate of usage in Operation Iraqi Freedom could significantly shorten the serviceable life of the current fleet. Officials expect that all Reliability, Availability, and Maintainability/Rebuild to Standard vehicles will need to go through an Inspect and Replace Only As Necessary maintenance program¹⁷ since they will have to stay in the fleet longer than expected.

¹⁷During an Inspect and Replace Only As Necessary maintenance program, vehicles are disassembled and inspected for deficiencies and only those deficiencies that are identified are repaired or replaced.

Marine Corps Medium Tactical Vehicle Replacement

The Medium Tactical Vehicle Replacement (MTVR) is a family of trucks with 7-ton capacity that consists of six variants. Comprising the Medium Tactical Vehicle Replacement fleet is a standard 7-ton cargo variant, an extended bed 7-ton vehicle, a dump truck, and a wrecker. The MTVR began replacing two aging variants of 5-ton vehicles in fiscal year 2002. The MTVR is capable of moving personnel and cargo cross country in support of maneuver units. The MTVR has increased capabilities compared to the 5-ton truck and is capable of being delivered by cargo aviation assets.

Figure 26: Marine Corps Medium Tactical Vehicle Replacement



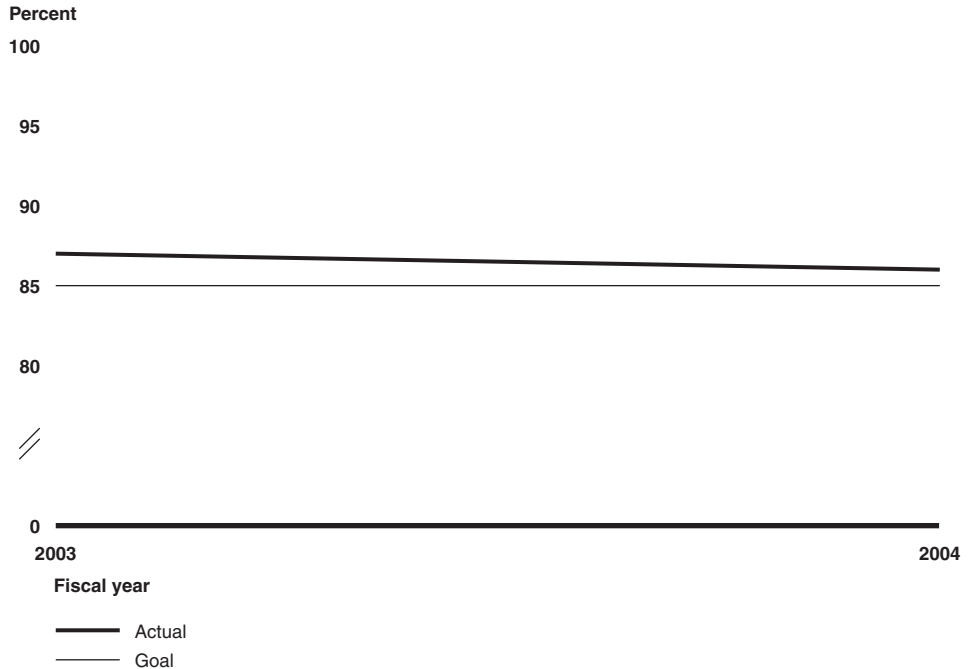
Source: U.S. Marine Corps.

Condition



We assessed the condition as green because, as can be seen in figure 27, the Medium Tactical Vehicle Replacement fleet has met the Marine Corps' stated material readiness goal of 85 percent for the 2 years that data were available, fiscal years 2003 and 2004. Though the MTVRs are being aggressively used in support of Operation Iraqi Freedom, officials stated that they are fairly easy to maintain and there are sufficient repair parts to meet current requirements. Officials also attribute much of the Marine Corps' success at keeping high material readiness rates to the maintenance personnel.

Figure 27: Average Material Readiness Rates for Marine Corps Medium Tactical Vehicle Replacement Fleet, Fiscal Years 2003 – 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy and funding of the MTRV as green because, despite experiencing some combat losses and the lack of funding to replace these losses, the Marine Corps has made plans to meet 7-ton vehicle demands of the Marine Corps in the short term. The Marine Corps possesses an indefinite delivery/indefinite quantity contract with Oshkosh Trucks, which allows it to increase the number of vehicles in the fleet without negotiating a new contract. The Marine Corps has utilized this contract to procure an additional 1,850 MTRV upgrade armor kits, which will be used to provide additional protection to deploying Marine Expeditionary Units and as a reserve for Marine Expeditionary Brigades. In the fiscal year 2006 Unfunded Programs List, the Marine Corps identified \$1.4 million to procure seven new MTRVs that will help replace actual and projected combat losses.

Long-Term Program Strategy and Funding



We assessed the long-term program strategy and funding of the MTRV as green because the Marine Corps plans provide sufficient numbers of MTRVs to equip all Marine Corps units in the long-term. Marine Corps officials stated that they have plans to reconstitute equipment returning from deployment and may rotate equipment between deploying units and prepositioned forces. The officials believe that these actions could balance out the usage rates of the fleet and therefore maintain the fleet's life expectancy. As discussed in the near-term program strategy and funding, the Marine Corps possesses an indefinite delivery/indefinite quantity contract with the original equipment manufacturer and program officials believe the Marine Corps can source equipment in the future to meet requirements.

AV-8B Harrier Jet

The AV-8B Harrier Jet's mission is to attack and destroy surface targets during day and night conditions and to escort assault support aircraft. It has a short takeoff and vertical landing capability to enable it to deploy and operate from amphibious assault ships and remote tactical landing sites. There are 154 in inventory (131 combat capable aircraft, 17 noncombat capable training aircraft, and 6 aircraft in storage), with an average age of 9 years. The Joint Strike Fighter is expected to replace the AV-8B beginning in 2012.

Figure 28: AV-8B Harrier Jet



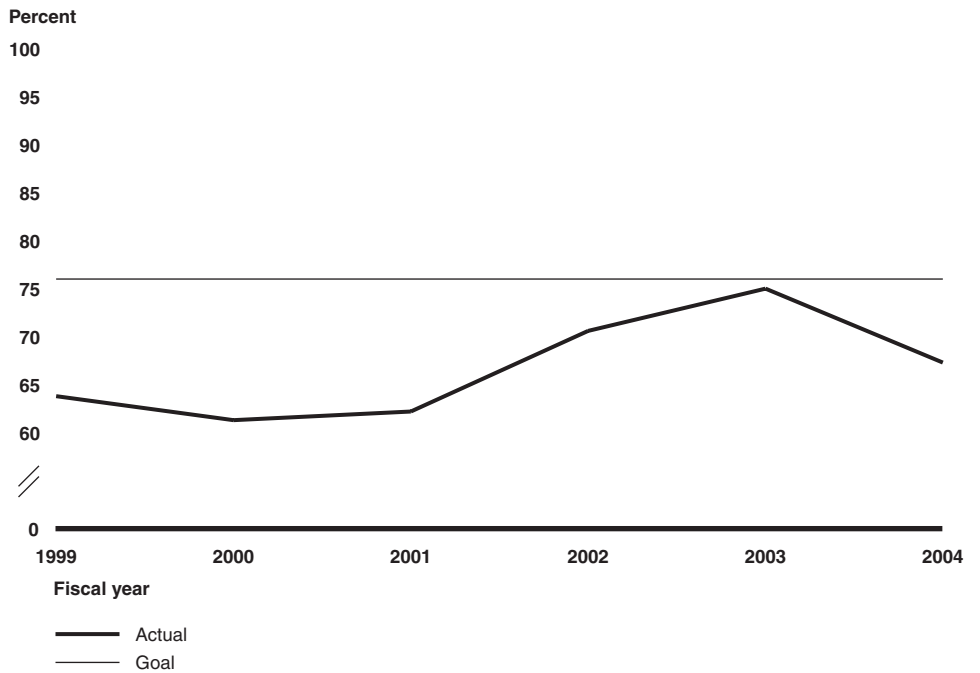
Source: Defense Visual Information Center.

Condition



We assessed the condition of the AV-8B as yellow because it consistently failed to meet the Marine Corps' mission capable rate goal of 76 percent between fiscal years 1999 and 2004 (see fig. 29 below). However, despite missing the mission capable goal, the mission capable trend showed some improvement through fiscal year 2003. Further, the AV-8B aircraft nonmission capable rates for maintenance and supply also showed improvement during that time frame. Marine Corps officials commented favorably on the aircraft's performance in support of operations in Iraq and Afghanistan, and the aircraft's wartime utilization was about one and one-half times the normal peacetime rate. A defense panel has analyzed past problems with the aircraft and they have recommended improvements to maintenance cycles and technician availability.

Figure 29: Average Mission Capable Rates for Marine Corps AV-8B Aircraft, Fiscal Years 1999 – 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and
Funding



We assessed the near-term program strategy and funding of the AV-8B as green because the Marine Corps has several initiatives and programs established and funded to improve the capabilities, safety, and reliability of the aircraft. The Marine Corps has procured, either through upgrades or remanufacture, 93 aircraft with radar/night attack which increases the ability of the aircraft to complete assigned missions in a greater variety of weather and light conditions. Officials also report that they have fully equipped all AV-8B aircraft with LITENING pods which increase image resolution for ground targeting. The Marine Corps has also developed new maintenance practices and policies that will increase readiness and decrease downtime spent in maintenance. According to Marine Corps officials, as a result of these policies the Marine Corps has seen an approximately 66 percent increase in the serviceable life of the aircraft.

Long-Term Program Strategy and
Funding



We assessed the long-term program strategy and funding of the AV-8B as yellow given the potential for delays in the Joint Strike Fighter program which will require the AV-8B to fly longer than expected. Increasing program costs and unproven critical technologies could further delay the Joint Strike Fighter program's initial entry into service, which is currently planned for 2012 with complete fielding in 2024. The Marine Corps currently plans to fly the AV-8B until the 2011-2020 time frame. Marine Corps officials note that funding is sufficient to execute the long-term program strategy for the AV-8B through the Future Years Defense Program.

AH-1W Super Cobra
Helicopter

The AH-1W Super Cobra is a day/night, marginal weather, Marine Corps, attack helicopter that provides en route escort and protection of troop assault helicopters, landing zone fire suppression during the assault phase, and fire support during ground escort operations. There are 179 aircraft in the inventory with an average age of 15 years.

Figure 30: AH-1W Super Cobra



Source: Defense Visual Information Center.

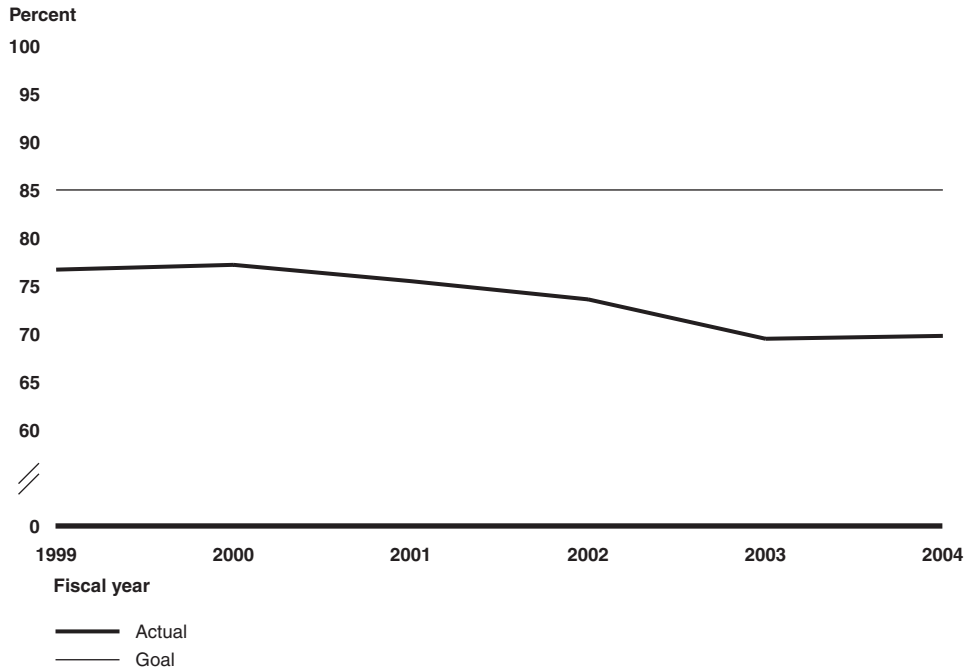
Condition



As in our prior report,¹⁸ we assessed the condition of the AH-1W Super Cobra as yellow because the aircraft consistently failed to meet its mission capable rate goal of 85 percent during the fiscal year 1999 to 2004 period, as shown in figure 31. Despite the aircraft's low mission capable rates, officials stated that the AH-1W was able to meet all of its mission requirements during this period. Further, the AH-1W upgrade program may decrease maintenance needs due to parts commonality with other Marine Corps utility helicopters. The AH-1W has served in both Operation Enduring Freedom and Operation Iraqi Freedom and deployed mission capable rates were higher than for those aircraft that were not deployed. The aircraft wartime utilization is about two times that of peacetime operations. The Marine Corps rotates the Super Cobras out of these theaters and conducts depot-level maintenance on the aircraft upon their return.

¹⁸GAO-04-112.

Figure 31: Average Mission Capable Rates for Marine Corps AH-1W Helicopters, Fiscal Years 1999 – 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy and funding of the AH-1W as yellow because while the Marine Corps has established a program to remanufacture the current fleet of AH-1W Super Cobras to a more capable AH-1Z, they may experience a shortage of AH-1Ws during the remanufacturing process. Officials stated that they may be short as many as 40 AH-1Ws due to operational requirements and forecasts for future attrition. Marine Corps officials further stated that if there is a shortfall, it would largely occur in the reserves due to the current operational requirements for the active squadrons. This could seriously impact the reserve air wing’s ability to train pilots and meet operational requirements in the future. Additionally, the Marine Corps identified \$50 million in unfunded requirements for engineering efforts associated with the remanufacturing program.

Long-Term Program Strategy and Funding



We assessed the long-term program strategy and funding for the AH-1W Super Cobra as yellow because, as discussed in the near-term program strategy and funding, the Marine Corps potentially faces many years of AH-1W shortages as the remanufacturing effort and future operational requirements place demands on the fleet. According to Marine Corps officials, if the upgrade program remains on schedule, the entire fleet of AH-1W will be upgraded to the AH-1Z by fiscal year 2017.

CH-46E Sea Knight Helicopter

The CH-46E Sea Knight helicopter provides all-weather, day/night, and night vision goggle assault transport of combat troops, supplies, and equipment during amphibious operations ashore. The total inventory of CH-46Es is 223 and the average age is 36 years. The Marine Corps plans to replace the fleet of CH-46E with the MV-22 tilt rotor aircraft beginning in 2007.

Figure 32: CH-46E Sea Knight Helicopter



Source: Defense Visual Information Center.

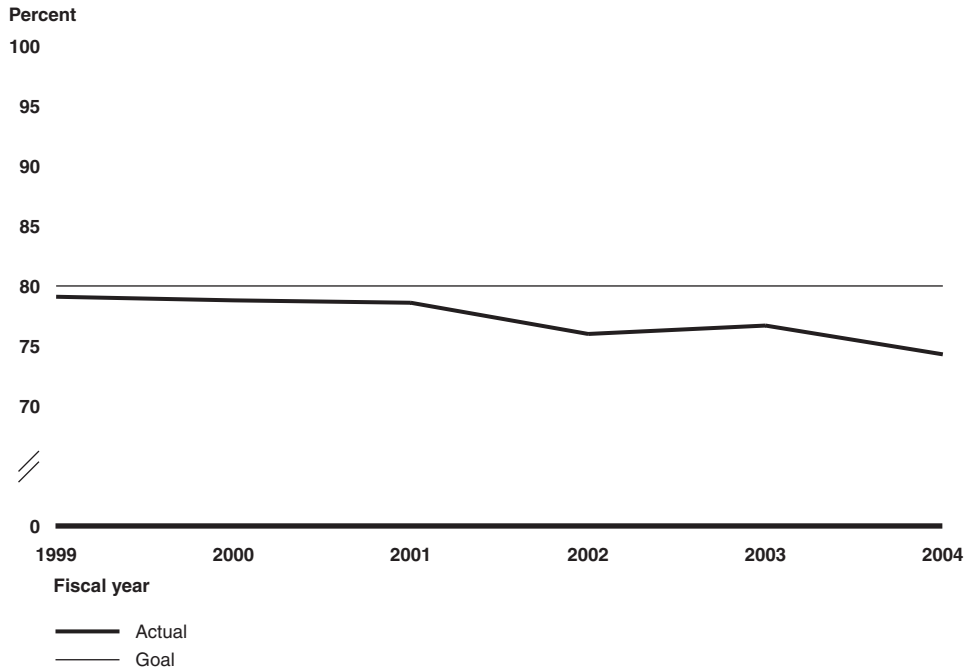
Condition



In our previous report, the CH-46E received a red rating because the aircraft consistently failed to meet mission capable goals.¹⁹ However, in this review we rated the condition of the CH-46E as yellow because although the mission capable rate trend is declining as shown in figure 33, rates were near the goal of 80 percent between fiscal years 1999 and 2004. Further, deployed mission capable rates were higher than nondeployed aircraft. Marine Corps officials noted that the CH-46E was able to meet mission requirements for operations in Iraq and Afghanistan, and the aircraft's wartime utilization was three times the normal peacetime rate. To help improve the condition of the aircraft, the Marine Corps has completed an analysis on the airframe and all major aircraft subsystems and has established a calendar-based depot maintenance cycle. Additionally, as of the end of August 2005, 234 engine upgrades have been completed. The engine upgrade is expected to improve capability and reduce maintenance requirements. However, Marine Corps officials stated that sustainment of the aircraft is still a concern due to its age and the fact that the aircraft may have to be in service longer due to fielding delays and funding cuts for the MV-22.

¹⁹GAO-04-112.

Figure 33: Average Mission Capable Rates for Marine Corps CH-46E Helicopters, Fiscal Years 1999 – 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy and funding for the CH-46E as red because the Marine Corps may be unable to meet its near-term operational requirements due to aircraft and potential repair part shortages caused by the age of the aircraft. Despite funding upgrades and modifications to the CH-46E to improve its safety, reliability, and survivability, repair parts may not be available through normal procurement lines because some of the original production lines have been closed. The Marine Corps is planning to rely on retiring aircraft to provide replacement parts for operating aircraft. Due to fielding delays of the MV-22, the CH-46E will not be retired at the pace anticipated and, according to Marine Corps officials this could lead to some repair parts shortages. Given the continued demands to support operations in Iraq and Afghanistan, pilot training, and the current scheduled fielding of the MV-22, the Marine Corps may be short one CH-46E squadron for a period of 2 years starting in

January 2006. Marine Corps officials stated that this squadron is necessary to support current contingency operations and operational plans developed at combatant command headquarters. They also stated that they are considering options to mitigate these issues by engineering repair parts to extend the serviceable life of aircraft components and utilizing other types of aircraft to fill in for the decommissioned squadron.

Long-Term Program Strategy and Funding



We assessed the long-term program strategy and funding for the CH-46E as red because delays in the MV-22 fielding will force the CH-46E to continue flying much longer than planned and this could impact the Marine Corps' ability to support future operations. DOD reduced procurement funding for the MV-22 aircraft in its 2006 budget request, which delays the full authorized fielding of all MV-22 squadrons until fiscal year 2016 versus 2011. This delay will force some squadrons, especially in the reserves, to continue to fly the older CH-46E despite the fact that it may not be able to support Marine Corps operational doctrine. Operational Maneuver from the Sea, a Marine Corps war-fighting doctrine, calls for forces to cross great distances to engage an enemy. These requirements currently exceed the capabilities of the CH-46E.

CH-53E Super Stallion Helicopter

The CH-53E Super Stallion helicopter provides assault support by transporting heavy weapons, equipment (such as High Mobility Multi-Wheeled Vehicles and Light Armored Vehicles), supplies, and troops. The CH-53E is capable of in-flight refueling. The average age is 17 years and there are 147 CH-53Es in the inventory. The expected replacement for the CH-53E is the Heavy Lift Replacement, but the requirements are still being determined. The Heavy Lift Replacement is expected to enter service in 2015.

Figure 34: CH-53E Super Stallion Helicopter



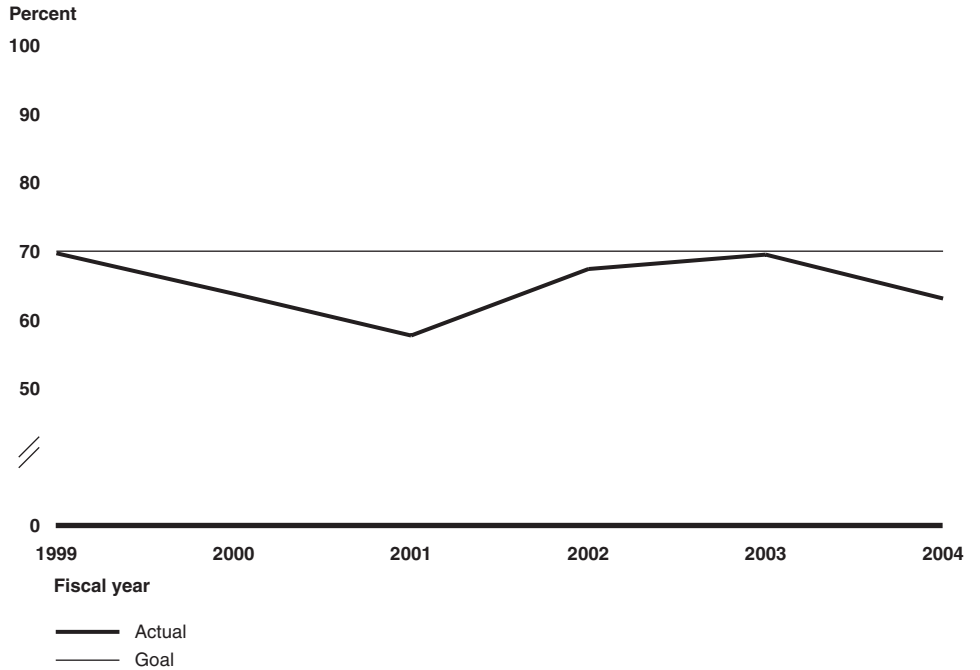
Source: U.S. Marine Corps.

Condition



We rated the condition of the CH-53E as yellow because the aircraft did not meet its mission capable goal of 70 percent in some years and between fiscal years 2003 and 2004 the mission capable rates declined as shown in figure 35. The aircraft wartime utilization is about two times that of peacetime operations, and the aircraft mission capable rates for deployed aircraft are higher than those for aircraft that are not deployed. According to Marine Corps officials, fatigue issues related to age, as well as structural cracks in the tail boom area of the aircraft, have been ongoing problems with the CH-53E fleet. The higher-than-expected usage rates in Operations Iraqi and Enduring Freedom have accelerated the need to repair these areas. The Marine Corps is addressing the structural cracks and engine upgrades through several programs. The engine upgrades are expected to improve capability and reduce maintenance requirements. Further, despite the declining readiness rates, officials stated that the CH-53E was able to meet all operational requirements.

Figure 35: Average Mission Capable Rates for Marine Corps CH-53E Helicopters, Fiscal Years 1999 – 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy and funding of the CH-53E as yellow because, although the Marine Corps has several initiatives underway that will help sustain and improve capabilities of the CH-53E, some of the upgrades and safety issues are on the service’s fiscal year 2006 unfunded program list. The Marine Corps has received funding from congressional adjustments and supplemental appropriations to fully outfit their CH-53E squadrons with aircraft armor systems, but it lacks sufficient funds to upgrade all engines or completely field diagnostic systems. According to Marine Corps officials, the diagnostic systems assist maintainers by identifying maintenance issues ahead of scheduled maintenance programs and will reduce the maintenance man hours required to support the aircraft. The Marine Corps identified \$30.6 million for these diagnostic systems and engine upgrades as unfunded priorities in fiscal year 2006.

Long-Term Program Strategy and
Funding



We rated the long-term program strategy and funding of the CH-53E as red because the requirements for the Heavy Lift Replacement, the replacement aircraft for the CH-53E, are still being established despite an initial fielding planned for 2015. According to officials, the Marine Corps must maintain at least 120 CH-53Es until the initial fielding of the Heavy Lift Replacement in order to support Marine Corps operations. Repair of the structural cracks found in the aircraft is critical to maintaining an adequate inventory of CH-53Es until the Heavy Lift Replacement becomes operational. Officials estimate that, if the current high usage rate and estimates of attrition hold true, the number of CH-53Es may fall below the number necessary to remain in service until the Heavy Lift Replacement becomes available unless required funding and maintenance are available.

Navy

DDG-51 Arleigh Burke Class Destroyer

Arleigh Burke Class Destroyers (DDG-51 class) provide multimission offensive and defensive capabilities and can operate independently or as part of a carrier strike group, surface action group, or expeditionary strike group. The primary missions of the Arleigh Burke Class Destroyers are the destruction of enemy cruise missiles, aircraft, surface ships, and submarines and to attack land targets in support of joint or combined operations. The first ship of this class was commissioned in 1991. The Navy plans to build 62 ships of this type and 47 of these platforms have been commissioned to date. The average age of DDG-51s in the fleet is 6.45 years. The final DDG-51 class ship will be delivered in fiscal year 2011.

Figure 36: DDG-51 Arleigh Burke Class Destroyer



Source: Defense Visual Information Center.

Condition



We assessed the condition of the DDG-51 class as yellow due to maintenance issues related to major ship systems and bandwidth limitations experienced by this ship class. Similarly, this ship class received

a yellow rating in our previous report.²⁰ Each year a number of ships in the DDG-51 class are evaluated by Navy inspectors; most of the DDG-51 class ships inspected in recent years have done well in important inspection areas, such as the destroyer's electrical and combat systems. However, areas such as the environmental protection systems and damage control systems performed poorly in these evaluations. For example, watertight doors are problematic in this type of ship and generally are in poor condition in all surface ships. In addition, the DDG-51 also has issues with corrosion, insufficient bandwidth for Web-based communication, and cracks on its bow, or the front, of the ship. Sufficient bandwidth is critical to the ability of these ships to operate with the rest of the Navy, which relies heavily on the internet for day-to-day operations.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy and funding of the DDG-51 class as green because the Navy has an effective strategy to address near-term condition and concerns and sufficient funding is available for these plans. The Navy strategy identifies classwide deficiencies, prioritizes their importance, and then addresses the most significant issues. The Navy closely monitors corrosion, and has taken preventative measures to reduce its impact. Finally, the Navy will install Super High Frequency capabilities in the DDG-51 class to improve bandwidth limitations, and a review of the bow cracks is in progress.

Long-Term Program Strategy and Funding



We assessed the long-term program strategy and funding of the DDG-51 class as yellow because the Navy has a strategy to address long-term condition and concerns, but it is not fully funded. The Navy plans a Midlife Modernization to ensure that the DDG-51 class of ships remains a relevant fleet asset for its full life expectancy. The fully funded modernizations are scheduled to begin in fiscal year 2010, and include upgrades to DDG-51 combat systems that may reduce personnel costs. However, the Navy has reduced planned future operation and maintenance funding across all surface ships in the fleet. These reductions have the potential to affect the

²⁰GAO-04-112.

material condition of the DDG-51 class, and cause higher costs in later years to make up for deferred maintenance. The DDG-51 class is expected to remain in the fleet until fiscal year 2046.

FFG-7 Oliver Hazard Perry Class Frigate

Oliver Hazard Perry Class Frigates (FFG-7 class) are surface combatants with antisubmarine warfare and limited anti-air warfare capabilities. Frigates conduct escort for amphibious expeditionary forces, protection of shipping, maritime interdiction, and homeland defense missions. There are 30 FFGs in the fleet, with an average age of 20.8 years. The FFG-7 class is expected to remain in service until 2019. There is no planned replacement for this ship; however, the Littoral Combat Ship will perform many of the missions currently performed by these ships.

Figure 37: FFG-7 Oliver Hazard Perry Class Frigate



Source: Defense Visual Information Center.

Condition



We assessed the condition of FFG-7 class as yellow, the same rating it received in the last report,²¹ due to maintenance issues related to major ship systems and bandwidth limitations experienced by this ship class. These frigates operate using diesel engines and these systems' older engines need more maintenance than modern gas turbine engines. Additionally, the water and ventilation systems must be replaced to ensure that the ship can operate until it reaches the end of its required service life. Each year a number of ships in the FFG-7 class are evaluated by Navy inspectors, and they have also found shortfalls in damage control equipment and the environmental protection systems of these ships. Moreover, these frigates have only a limited amount of bandwidth and this affects their ability to operate with the rest of the Navy, which relies heavily on electronic communications for its day-to-day operations. Naval inspectors determined that other systems on board FFG-7 class ships were in good condition, including its propulsion and combat systems.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy and funding for the FFG-7 class as yellow because the Navy's near-term plan to correct FFG-7 class condition problems does not address all issues. The Navy has decided not to install a Super High Frequency communication system on these ships to improve their access to bandwidth and improve their access to Web-based communication. Instead, these ships will continue to operate with a limited amount of available bandwidth in the future, despite the Navy's increasing use of the internet to share operational, training, and personnel data.

Long-Term Program Strategy and Funding



We assessed the long-term strategy of the FFG-7 class as yellow because of plans to decrease future operation and maintenance funding. The Navy plan to modify and modernize the FFG-7 fleet will be complete by fiscal year 2011; however, these modifications may not address all of the

²¹GAO-04-112.

problems that may arise in the aging FFG-7 class. DOD intends to decrease the amount of operation and maintenance funding available for its surface ships in the future, which may limit the Navy's ability to address any emerging maintenance issues. While all surface ships will likely have maintenance funding cuts, the FFG-7 class and other older ships may be the most affected by these shortfalls.

LPD-4 Amphibious Transport Dock Ship

Austin-class amphibious transport dock ships (LPD-4 class) are warships that embark, transport, and land elements of a Marine landing force and its equipment. Austin class ships also act as helicopter refueling stations and limited casualty receiving and treatment ships. There are currently 11 LPD-4 class ships in the inventory with an average age of 37 years. The LPD-4 class ships are expected to remain in the fleet until 2014. The San Antonio-class LPD-17 is beginning to replace the LPD-4 class in fiscal year 2005.

Figure 38: LPD-4 Amphibious Transport Dock Ship



Source: Defense Visual Information Center.

Condition



We assessed the condition of the LPD-4 class as yellow due to maintenance issues related to major ship systems and bandwidth limitations experienced by this ship class. The LPD-4 received the same yellow rating

in our previous report.²² Insufficient air conditioning is a habitability concern on many LPD-4 class ships, especially given current operations in high-temperature regions. The LPD-4 class also has issues with electrical systems, propulsion, and insufficient bandwidth for Web-based communication. Sufficient bandwidth is critical to the ability of these ships to operate with the rest of the Navy, which relies heavily on the internet for day-to-day operations. While these maintenance issues are significant, some LPD-4 class ships have completed an Extended Sustainability Program that addressed the most severe maintenance problems affecting this class.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy and funding of the LPD-4 class as yellow because the Navy has a plan to address near-term condition and concerns, but it excludes those ships scheduled to decommission within 5 years and the decommission dates have historically slipped. The Navy is in the midst of an Extended Sustainability Program that corrects serious LPD-4 class deficiencies, for example, its inadequate onboard electrical system. The Navy has selected 5 of 11 LPD-class ships for this program, and will have completed 4 by the end of fiscal year 2005. The ships that will not undergo the Extended Sustainability Program are all within 5 years of decommissioning, and therefore can only undergo normal repairs and maintenance. In the past, this decommissioning date has been moved back by several years, but ships have retained their decommissioning status—thus preventing any upgrades or modernizations. This will lead to a wide variance of condition between different ships in the LPD-4 class.

Long-Term Program Strategy and Funding



We assessed the long-term program strategy and funding of the LPD-4 class as yellow because of plans to decrease future operation and maintenance funding, and uncertainty concerning the LPD-4's service life. The Navy has reduced planned future operation and maintenance funding across all surface ships in the fleet. These reductions have the potential to affect the material condition of the LPD-4 class. Additionally, procurement of the

²²GAO-04-112.

LPD-4 class replacement, the LPD-17 class, has been reduced from 12 ships to 9. However, the Navy requirement remains the same—the ability to transport two and a half Marine Expeditionary Brigades.

F/A-18 Hornet/Super Hornet Aircraft

The F/A-18 is an all-weather fighter and attack aircraft with 6 models: the F/A-18 A, B, C, and D, also known as the Hornet; and the E and F also known as the Super Hornet. The capabilities of the Hornet and Super Hornet include fighter escort, fleet air defense, force projection, and close and deep air support. The current inventory of F/A-18's is 914: A, 123; B, 28; C, 396; D, 139; E, 102; and F, 126. The average age in years is: A, 18.5; B, 20.2; C, 12.7; D, 12.1; E, 2.5; and F, 2.4. The Navy plans to gradually replace the Hornet with the Super Hornet and the Joint Strike Fighter.

Figure 39: F/A-18 Hornet/Super Hornet Aircraft



Source: Defense Visual Information Center.

Condition

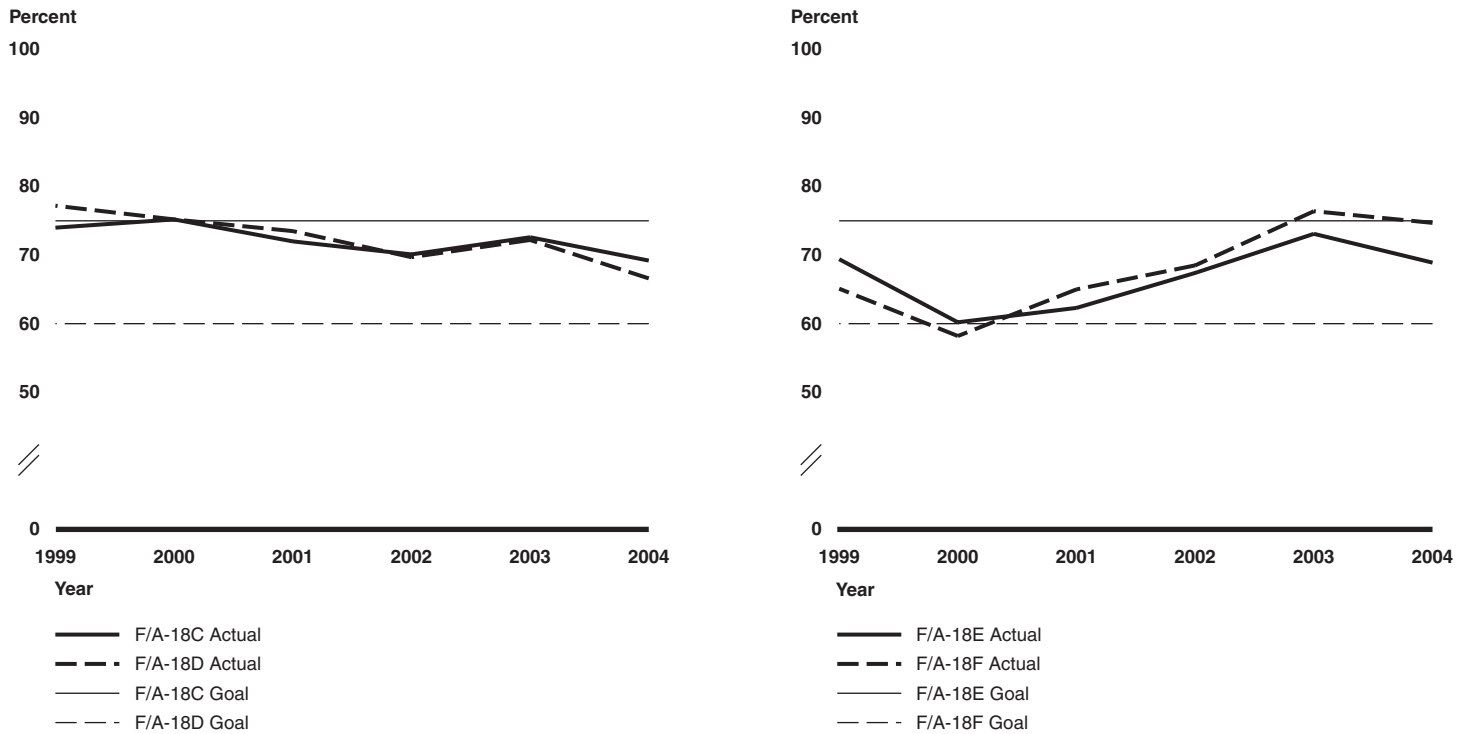


We assessed the condition of the F/A-18 as green given that it generally is available in sufficient numbers to meet Navy requirements and though mission capable goals vary, all models are close to or exceed mission capable goals between calendar years 1999 and 2004, as shown in figure 40. Additionally, all variants of the F/A-18 consistently meet their daily availability requirements. In our previous study, the condition of the F/A-18 was rated yellow because it missed its mission capable goals, but including the daily availability factor in our analysis improved its rating to green.

Appendix II
Assessments of Selected Equipment Items

However, both the Hornet and Super Hornet have deficiencies with fuel systems and the Super Hornet also has deficiencies with cockpit canopies, all of which degrade mission capable rates. In addition, the Navy is beginning a long-term effort to replace the overstressed center section of the Hornet fuselage, the center barrel. This effort addresses the predictable rate of wear and deterioration on the aircraft due to factors such as carrier takeoff and landings and increases the expected service life of the aircraft. The aircraft is not available for operations during the 1 year scheduled for this process. According to officials, during this period the Navy takes advantage of aircraft time out of service to conduct scheduled maintenance and other modifications on those aircraft.

Figure 40: Average Mission Capable Rates for Navy F/A-18 Aircraft, Calendar Years 1999 – 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy and funding of the F/A-18 as yellow because some funding is not identified for their program strategy, which includes important Hornet modernizations, and the Super Hornet lacks critical spare parts. The Navy is unable to fund improved detection and targeting systems for the Hornet, for example, the Advanced Targeting Forward Looking Infrared system, and the Joint Helmet Mounted Cueing System. Similarly, the Super Hornet will, in the near term, experience shortfalls in the availability of Government Furnished Equipment: equipment directly acquired by the government and subsequently made available to a contractor. These equipment shortfalls for the Super Hornet include extra fuel tanks and bomb racks.

Long-Term Program Strategy and Funding



We assessed the long-term program strategy and funding of the F/A-18 as yellow because of the uncertain status of its replacement, the Joint Strike Fighter, and the complexity of the center barrel replacement effort. The Navy has plans to maintain enough operational F/A-18 aircraft to meet the Navy's tactical air requirements until the Joint Strike Fighter is available by replacing the center barrels of 40 Hornets per year, a challenging goal given the complex nature of this effort. The Joint Strike Fighter is already behind schedule and a number of its critical technologies are immature, indicating that it may be delayed even further. Program officials confirmed that another delay in arrival of the Joint Strike Fighter would require the F/A-18 program to seek other alternatives to meet requirement goals, such as to replace more center barrels on Hornets, manage the normal wear and tear on the aircraft, or procure additional Super Hornets. Moreover, center barrel stress is not the only factor used when determining the expected service life of an aircraft; flying hours and takeoff and landings also impact the F/A 18's life expectancy. If Hornets are required to operate longer than currently planned, these aging aircraft may not be available in sufficient numbers to meet Navy requirements for tactical aircraft.

EA-6B Prowler Aircraft

The EA-6B Prowler provides Electronic Attack and Anti-Radiation Missile capabilities against enemy radar and communications systems. The Prowler's primary mission is to support strike aircraft and ground troops by jamming enemy radar, data links, and communications. The current

inventory is 119 with an average age of 21.9 years. The Prowler fleet consists of carrier-based squadrons, and land-based expeditionary squadrons. The expeditionary capability will be replaced by the Air Force's B-52 electronic jammer suites, while the EA-18G Super Hornet Airborne Electronic Attack aircraft will begin to replace the carrier-based capabilities in 2009.

Figure 41: EA-6B Prowler



Source: Defense Visual Information Center.

Condition

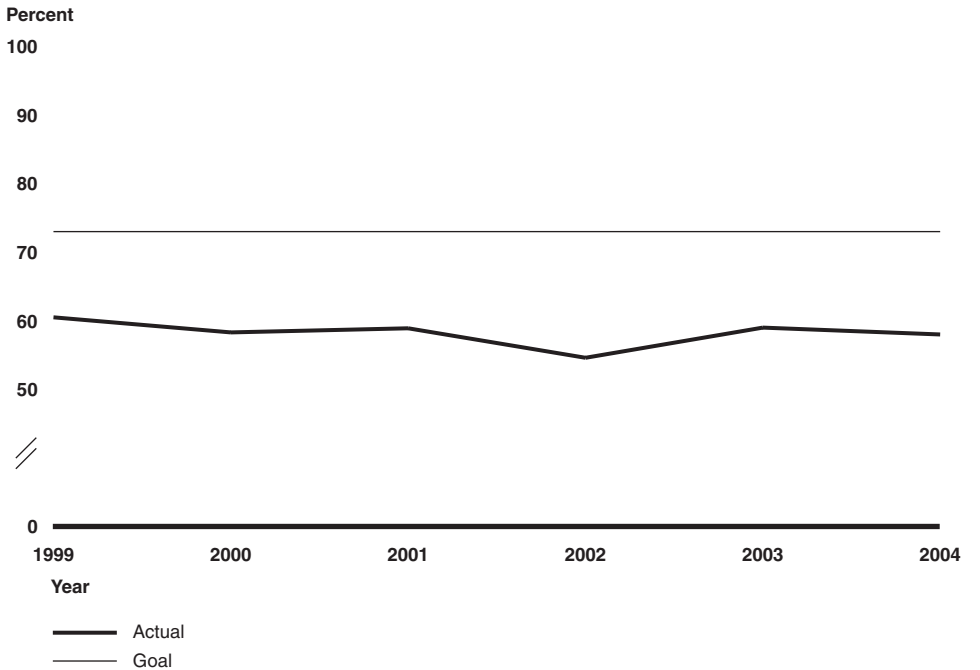


We assessed the condition of the EA-6B as yellow, as we did in our previous report,²³ because it consistently misses the Navy's mission capable goal of 73 percent between calendar years 1999 and 2004, as shown in figure 42, due to a number of maintenance problems. However, Navy officials believe the EA-6B will meet its daily availability requirements later this year. Much of this improvement is due to replacement of the center wing, which had shown signs of fatigue due to the stress of operations, on a number of these aircraft. The Navy will have completed this complex effort, which removed aircraft from the fleet for a number of months, on enough Prowlers to meet their requirements. Despite this improvement, the EA-6B's mission capable rates have been degraded by problems with communications equipment,

²³GAO-04-112.

canopies, and wings. Other problems with fuel cells and environmental control systems have also diminished mission capable rates. The EA-6B's utilization rates have also been high, given its role as a high-demand asset in current operations.

Figure 42: Average Mission Capable Rates for Navy EA-6B Aircraft, Calendar Years 1999 – 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy and funding of the EA-6B as yellow because the Navy has not funded all of its short-term requirements. The Navy has plans to address the major degraders of mission capable rates; however, not all of these plans are fully funded. Navy plans include replacing aging center wing sections in the EA-6B fleet. The condition of the Prowler fleet will continue to improve in the near term because of this funded initiative. Additionally, EA-6B officials have been working with manufacturers to correct canopy deficiencies and have resolved this problem. Current Navy plans for purchasing canopies are also fully funded

for all aircraft. However, currently no plans or funding have been identified to correct communications equipment issues. Furthermore, the Navy has not fully funded equipment that improves the EA-6B's ability to use its unique electronic warfare capabilities to counter an emerging threat.

Long-Term Program Strategy and Funding



We assessed the long-term program strategy and funding of the EA-6B as yellow because only a limited number of aircraft will receive an upgrade that is critical to transition the EA-6B fleet to the EA-18G aircraft. In the long term, the Navy has outlined an effective strategy to modernize and replace the Prowler. This strategy includes wing replacement and Improved Capability III upgrades on the EA-6B. The Prowler's capabilities will be replaced by the EA-18G and Air Force B-52 electronic jammer suites. However, this strategy has not been fully funded. Specifically, the Navy has a stated requirement to provide the Improved Capability III upgrade on 21 aircraft, but has only funded the upgrade for 14 aircraft. This improved third-generation capability is a significant technology leap beyond the EA-6B's current jamming capabilities, and according to program officials, an important component in the Navy's transition to the EA-18G. Moreover, aircraft with this capability will be used by the Marine Corps until 2015, at which time they plan to replace their EA-6B aircraft with a version of the Joint Strike Fighter. The Joint Strike Fighter is already behind schedule and a number of its critical technologies are immature, indicating that it may be delayed even further.

P-3 Orion Aircraft

The P-3 Orion is a four-engine turboprop antisubmarine and maritime surveillance aircraft. It provides undersea warfare; antisurface warfare; and Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance capabilities to naval and joint commanders. There are 173 aircraft in the fleet and their average age is 24.4 years. The Navy will replace P-3 capabilities with the Multi-mission Maritime Aircraft in 2013, and the Broad Area Maritime Surveillance Unmanned Aerial Vehicle.

Figure 43: P-3 Orion Aircraft



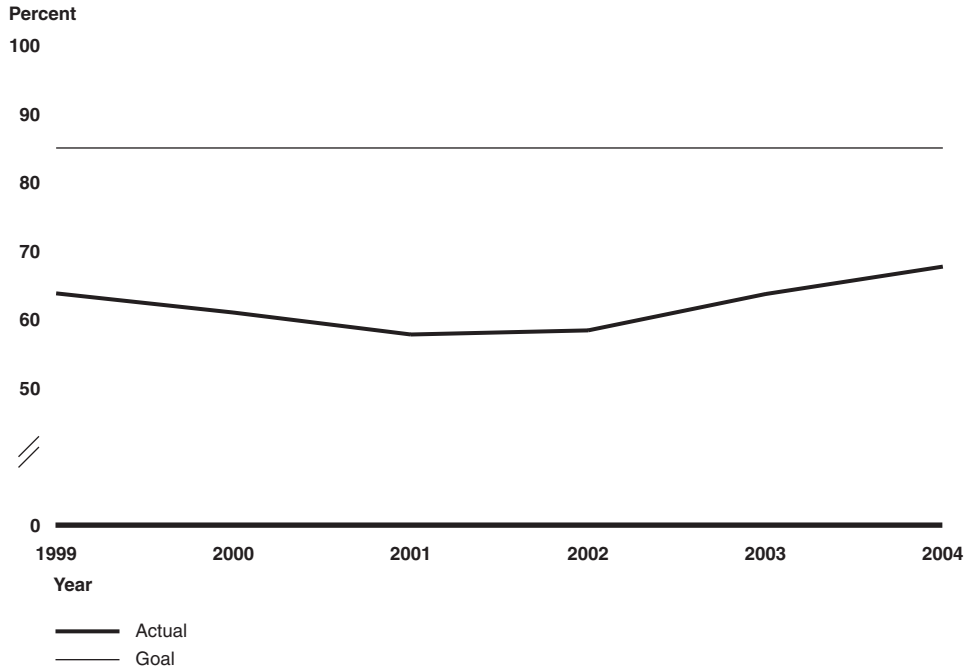
Source: Defense Visual Information Center.

Condition



We assessed the condition of the P-3 as red because it has consistently missed its mission capable goals by a significant percentage, as shown in figure 44, and the Orion is not available in sufficient numbers to meet day-to-day Navy requirements. Overall, the condition of the P-3 has been primarily degraded by the effect of structural fatigue on its airframe and the obsolescence of communication, navigation, and primary war-fighting systems. To address airframe issues, specifically cracks in the aircraft's wings, the Navy has instituted a special structural inspection and repair program. A number of aircraft are currently undergoing these special structural inspections and repairs, and are not available for fleet operations. Moreover, the obsolescence of the communication, navigation, and war-fighting systems resulted in only about 26 percent of these aircraft being rated as fully capable of performing all of their missions last year.

Figure 44: Average Mission Capable Rates for Navy P-3 Aircraft, Calendar Years 1999 – 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy and funding of the P-3 as yellow because the Navy’s near-term plans do not address all condition and obsolescence issues. However, the Navy will have completed enough structural inspections and repairs to ensure that there are sufficient P-3 Orions available to meet day-to-day requirements next year. While this mitigates serious airframe issues, obsolescence of electronics and avionics systems will continue to degrade the ability of this aircraft to fulfill all of its missions. The Navy will address some of these obsolescence issues in the short term, such as installing an improved high-frequency radio. However, other needed improvements have not been funded, for example, efforts to improve the aircraft’s over the horizon communications and upgrades for the aircraft’s missile defense system.

Long-Term Program Strategy and
Funding



We assessed the long-term program strategy and funding of the P-3 as red because while the Navy has identified what can be done to address the obsolescence of the mission systems over the long term, this program has not been approved or funded. The Navy plan, known as the Anti-submarine Maritime Improvement Program, ensures the continued relevance of the P-3 mission systems until the Multi-mission Maritime Aircraft is operational. This improvement program has not been fully approved, nor has it been funded. The obsolescence of its mission system may have a significant impact on its war-fighting capabilities. Moreover, it is still not certain that the fixes identified for the P-3 airframe will ensure that sufficient numbers of this aircraft will be available until it is fully replaced in 2019.

Standard Missile-2 Surface-
to-Air Missile

The Standard Missile-2 is a medium to long-range, shipboard surface-to-air missile. The primary mission of the Standard Missile-2 is fleet area air defense and ship self-defense; its secondary mission is antisurface ship warfare. There are four different blocks of the Standard Missile-2 in service (III, IIIA, IIIB, and IV). The inventories of these blocks are classified, but over 88 percent of the inventory is greater than 11 years of age, and some blocks are older and less capable than others. The capabilities of the Standard Missile-2 will be replaced by the Standard Missile-6 Extended Range Active Missile beginning in fiscal year 2009.

Figure 45: Standard Missile-2 Surface-to-Air Missile



Source: U.S. Navy.

Condition



We assessed the condition of the Standard Missile-2 as yellow because it has consistently failed to meet its asset readiness goal of 87 percent. The asset readiness goal is the missile equivalent of the mission capable goal. Timely certifications of missiles—assessments of equipment condition and necessary repair and replacement of missile components—are critical to these readiness rates. These certifications must be done approximately every 4 years and a missile is not ready for issue until certified. These assessments have not been done at a rate sufficient to meet asset readiness goals. In GAO's previous study, the condition of the Standard Missile-2 was rated red; however, the asset readiness rates of these missiles have improved since that time.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy and funding of the Standard Missile-2 as green because the Navy has a plan to address near-term condition, and the missile's inventory meets Navy requirements in the near term. The Navy has been able to deliver a more maneuverable version of this missile—the Block IIIB-MU—ahead of schedule. In addition, the Navy has increased the amount of operation and maintenance funding over the next couple of years to maintain the asset readiness rate close to the goal. Both of these steps will allow the Navy to meet inventory requirements in the near term.

Long-Term Program Strategy and Funding



We assessed the long-term program strategy and funding of the Standard Missile-2 as red because future funding shortfalls will significantly affect missile availability. The Navy plans to meet requirements by procuring new missiles and modernizing existing ones. However, the new procurements and missile modernizations are not in sufficient numbers to allow the Navy to meet inventory requirements in the long term. Furthermore, the operation and maintenance funding planned for the long term is not sufficient for the Navy to meet asset readiness goals. Funding for certifications was limited until fiscal year 2004; subsequently, increased funding improved assets readiness rates. Funding will be limited again beginning in fiscal year 2007, affecting the long-term availability and ready-

for-issue rate of the Standard Missile-2. While the Standard Missile-6 is currently ahead of schedule, this weapon will not be available in a timely manner or in sufficient numbers to allow the Navy to meet long-term inventory requirements.

Air Force

For the six Air Force aircraft in this appendix, fiscal year 2004 data are through July 2004.

F-15 Eagle and Strike Eagle

There are two types of F-15 aircraft: the F-15 Eagle (A-D variants) and the F-15E Strike Eagle. The F-15 A and F-15C are single-seat, supersonic fighter aircraft used for air-to-air combat, and the B and D variants are their dual-seat training counterparts. The F-15E Strike Eagle is a dual-seat, supersonic fighter aircraft used for both air-to-air combat and air-to-ground combat. There are 513 F-15 Eagles and 221 F-15E Strike Eagles in the Air Force inventory, and the average age depends upon the variant, with F-15 Eagles ranging from about 21 years to 26 years, and the F-15E Strike Eagles averaging about 12 years. The F/A-22 is the designated replacement for the F-15 Eagle. The Air Force plans to retire most of the F-15 Eagle fleet, retaining 179 F-15C/D variants beyond 2015 to augment the F/A-22 through 2025, while maintaining the entire fleet of F-15Es through at least 2025.

Figure 46: F-15 Eagle



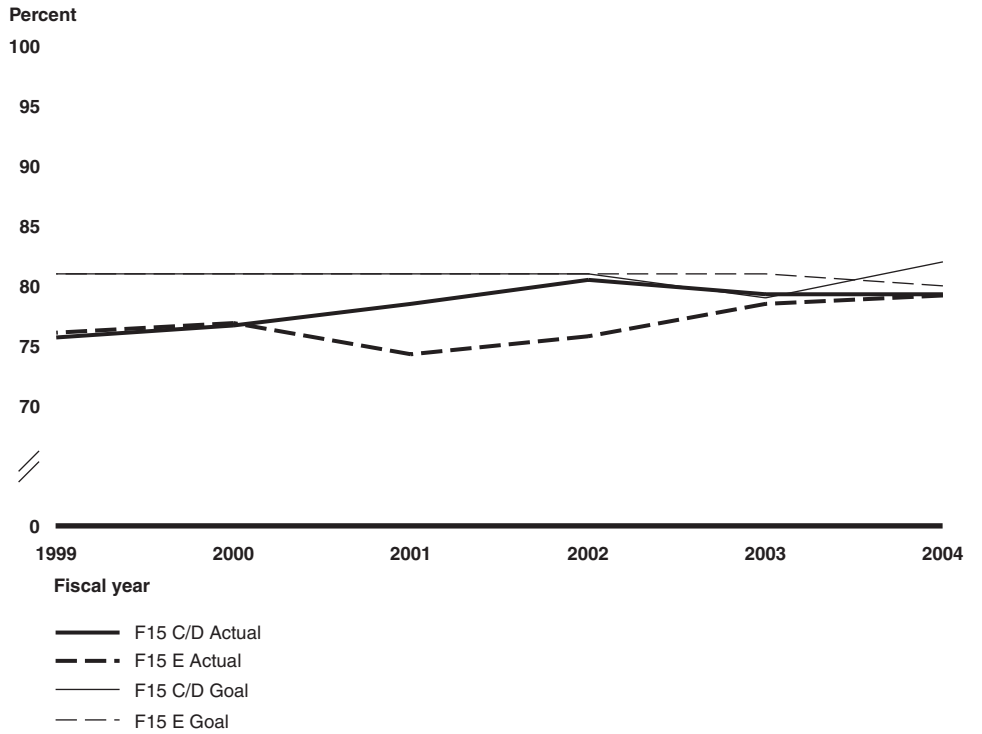
Source: Defense Visual Information Center.

Condition



We assessed the condition of the F-15 C/D and F-15E as green because mission capable rates have been near the Air Force's stated goal and have either improved or remained constant between fiscal years 1999 and 2004. The Air Force's stated goal depends on the variant, and ranges from 79 percent to 82 percent. As shown in figure 47, mission capable rates for the F-15 C/D and F-15 E variants, which are expected to remain in the fleet after retirement of the older F-15 aircraft, have increased to about 79 percent. Officials stated that cracks and issues related to the age of the aircraft are the most common problems affecting the aircraft, but noted that the Air Force is addressing these issues through programmed depot maintenance. Officials also stated that the F-15 is a viable and capable system, noting that the F-15E models were used during Operation Iraqi Freedom.

Figure 47: Average Mission Capable Rates for Air Force F-15 Eagle and Strike Eagle Aircraft, Fiscal Years 1999 - 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy for the F-15 and F-15E as green because the Air Force has developed and funded a strategy to address known problems, to include retirement of the older F-15 C/D variants. For capability and reliability upgrades, the Air Force has funded and is currently implementing replacements and upgrades for a variety of different systems on 179 F-15C/D variants, to include engines, radars, and various structural improvements. For the F-15E, the Air Force has funded modernization of different systems—computer processors, avionics, and software—which is collectively known as a Suite 5E upgrade. This upgrade, which is fully funded for the F-15E fleet, is scheduled to occur from fiscal year 2006 through fiscal year 2011, and is expected to increase the survivability and weapons delivery capability of the aircraft. Officials also stated that technological obsolescence and diminishing manufacturing

sources are a concern for the entire F-15 fleet; however, they also stated that it is manageable, and were confident that the Air Force had the correct procedures to address the issue.

Long-Term Program Strategy and Funding



We assessed the long-term program strategy for the F-15 fleet as green because the Air Force near-term upgrades are fully funded and designed to keep the aircraft that will remain in the fleet viable and functioning through at least 2025. The F/A-22 Raptor is the F-15 Eagle's designated replacement, and officials stated that delays to its fielding schedule will not impact the retirement schedule of the F-15 fleet. Retirements for the F-15A/B aircraft are scheduled to begin in fiscal year 2005 with a total of 84 retirements expected to occur through fiscal year 2009, and retirement of 26 F-15 C/D aircraft is scheduled to begin in fiscal year 2009. The F/A-22 is expected to achieve operational capability in December 2005, and the entire fleet of 179 aircraft is currently scheduled to be procured through fiscal year 2008. Officials stated that the effect of changes in the F/A-22 fleet composition on further F-15 C/D aircraft retirements beyond fiscal year 2009 remains to be seen, as the total structure of the combat air fleet will be reviewed during the 2005 Quadrennial Defense Review.

F-16 Fighting Falcon

The F-16 is a compact, multirole fighter with air-to-air combat and air-to-surface attack capabilities. There are four F-16 variants – the A and C models are designed for one pilot, while the B and D models are two-seat tandem cockpit aircraft, which are used for training and can also be flown individually. Of the four variants, the F-16 C and D models incorporate the latest technology and have the capability to suppress or destroy enemy air defenses. The Air Force currently has 1,353 F-16 aircraft in its inventory, and the average age is about 15 years. The Air Force plans to retire the A and B variants because they are not expected to be structurally viable past 2008, although the specific schedule has yet to be published. The Air Force also plans to replace the F-16 with the F-35 Joint Strike Fighter beginning in 2013.

Figure 48: F-16 Fighting Falcon



Source: Defense Visual Information Center.

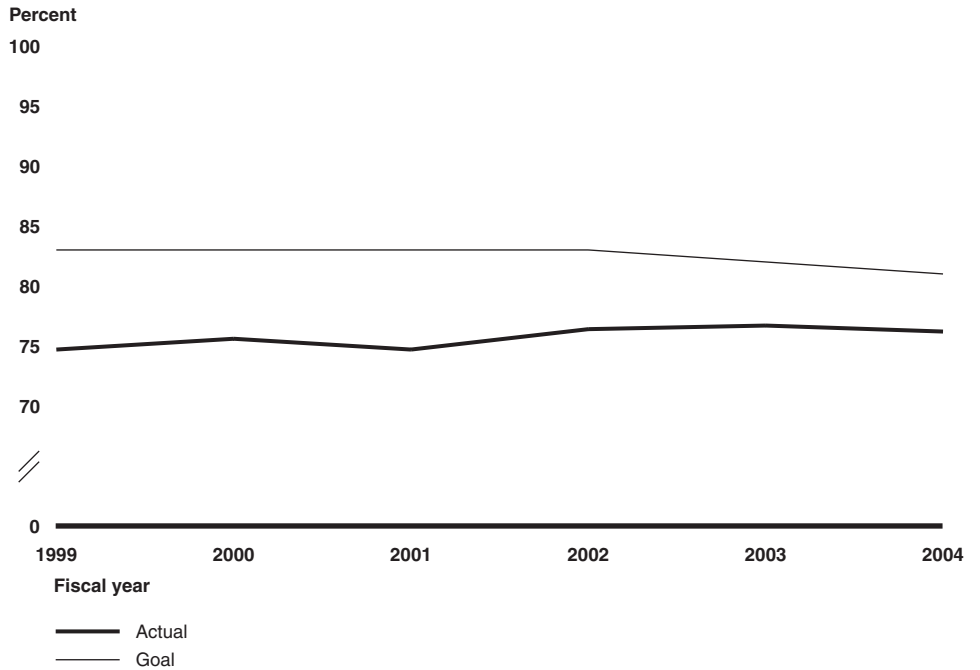
Condition



Consistent with the findings of our December 2003 report,²⁴ we assessed the condition of the F-16 as green because mission capable rates have been near the Air Force's stated goal and have remained relatively constant. For the A/B variants, mission capable rates were about 72 percent with an Air Force stated goal of 75 percent in fiscal year 2004 and, as shown in figure 49, mission capable rates for the C/D variants were about 76 percent compared to a goal of 81 percent. Officials stated that the most significant factor affecting the F-16 is cracks, which occur mostly on older aircraft and because of the stress caused by repeatedly landing without dropping its two 2,000 pound bombs. Despite these concerns, the Air Force has plans to address cracking. Further, although the rates for all variants are below the goals, officials stated the F-16 was able to meet operational requirements.

²⁴GAO-04-112.

Figure 49: Average Mission Capable Rates for Air Force F-16 Fighting Falcon Aircraft, Fiscal Years 1999 – 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy for the F-16 as green because the Air Force has developed and funded a strategy to address known problems. As we noted in our December 2003 report, structural issues related to age and use are affecting the F-16. To address these concerns, the Air Force began a structural augmentation program that strengthens the airframe in areas prone to cracking, namely the wings and fuselage. The structural augmentation program is expected to affect over 1200 of the aircraft and be completed by 2013. Other near-term initiatives that are being implemented to improve combat capabilities include the common configuration implementation program, which incorporates improvements to targeting, communications, and computer systems, and improvements to radar, avionics, and targeting systems. Officials stated that these programs are currently funded and being implemented, although not for the entire F-16 fleet.

Long-Term Program Strategy and
Funding



We assessed the long-term program strategy for the F-16 as green because current and projected funding for aircraft modernizations identified in the near-term program strategy are designed to ensure longer-term viability for the next 15 years. Although the Air Force has yet to publish an F-16 retirement schedule, officials indicate that the older variants will be retired, as will be reflected in future budget documents. The F-35 Joint Strike Fighter is the designated replacement for the F-16 but, according to officials, the retirement of the older F-16 variants will not be affected by the F-35 fielding schedule, since operational capability of the Air Force F-35 aircraft is not expected to occur until fiscal year 2013 and the exact quantity remains to be determined.

B-1 Lancer Bomber

The B-1 Lancer Bomber is a long-range, high-speed, large payload global attack aircraft that was originally designed for nuclear missions but was transitioned to a conventional role. In 2002, the Air Force began consolidating the fleet, reducing the B-1 inventory from 93 to 67 aircraft and transferring all remaining B-1 bombers to the active component. Beginning operations in 1986, the average age of the B-1 is about 17 years. The Air Force plans to keep the B-1 in use through at least 2040,²⁵ so there are no immediate plans to replace the aircraft.

²⁵Officials state that the calculated service life for a B-1 is 18,000 hours, and they estimate that the fleet would reach that point in 2040.

Figure 50: B-1 Lancer Bomber



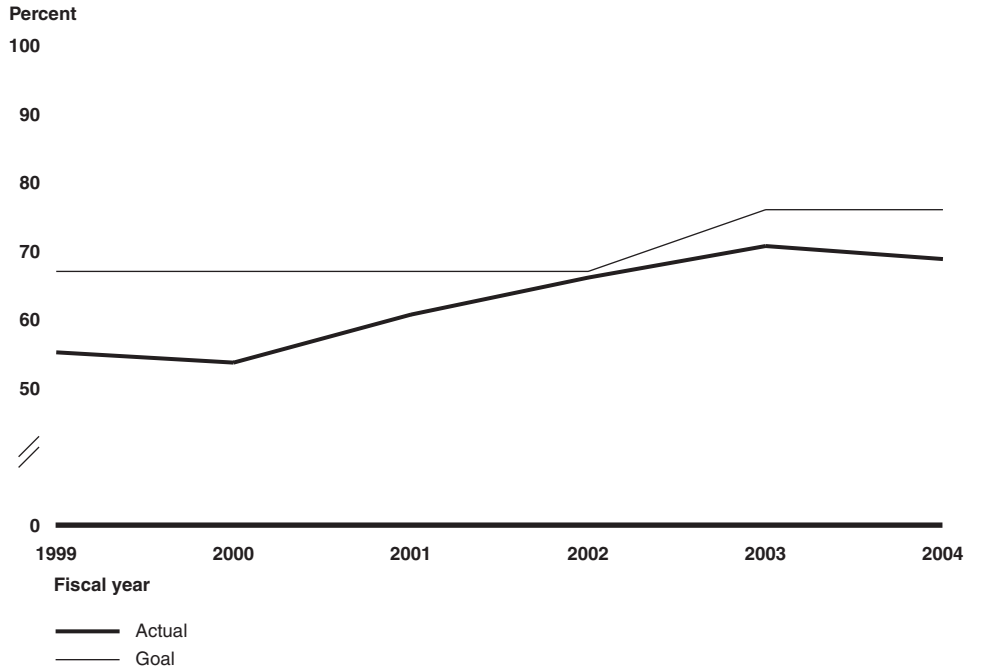
Source: Defense Visual Information Center.

Condition



We assessed the condition of the B-1 as yellow because mission capable rates were below the Air Force stated goal most of the time between fiscal years 1999 and 2004. As shown in figure 51, mission capable rates have increased between 1999 and 2004. Parts shortages were identified as a reason keeping rates below goals, and officials identified generators, automatic pilot controllers, and various pump and hydraulic systems as the items that were most often in short supply. After consolidation of the B-1 fleet in fiscal year 2002, the numbers of parts in the supply system increased as parts were taken from retired B-1 aircraft. To compensate for the smaller fleet size, the Air Force increased the mission capable goals from 67 percent in fiscal year 2002 to 76 percent in fiscal year 2003. The increase in the goal occurred as B-1 usage to support operations in Iraq and Afghanistan increased. Although the aircraft's mission capable rate was about 69 percent in fiscal year 2004, the rate for deployed aircraft was 80 percent. Additionally, officials noted that the B-1 is capable of accomplishing the Air Force's current needs.

Figure 51: Average Mission Capable Rates for Air Force B-1 Lancer Bombers, Fiscal Years 1999 - 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy for the B-1 as green because the Air Force has planned and funded programs to address the near-term sustainment issues affecting the aircraft. According to officials, the forecasted number of flight hours serves as the basis for funding planned maintenance activity and expected number of parts required for the aircraft. The fluctuations in the fleet size, coupled with the increase in usage for operations overseas, caused instability in the supply chain and increased the difficulty in efficient planning of maintenance cycles. For the near term, the Air Force has addressed this concern by increasing the number of forecasted flight hours for fiscal year 2005, which increases the funding for supply and maintenance activities and is expected to correct the disparity. In addition to addressing near-term sustainment issues, the Air Force has already funded and will complete plans to increase the sustainability and wartime capabilities of the B-1, to include the planned

fielding of increased munitions capabilities, and upgrades to the central computer systems and radar.

Long-Term Program Strategy and Funding



We assessed the long-term program strategy for the B-1 as green because the Air Force has a proactive strategy to address anticipated shortages and deficiencies in the aircraft, and has funded modernization efforts to meet requirements. Although a newer system in the Air Force's fleet, officials stated that technology has advanced significantly since the B-1 was fielded in the 1980s, resulting in a reduction in the number of manufacturers that make the original B-1 component parts. For example, the original computer technology in the B-1 used processors that, while cutting edge at the time, are slower than home computer processors. To address these issues, the Air Force has funded efforts to modernize and upgrade B-1 components, to include cockpit flight instrument displays and navigation systems. In addition to resolving potential supply chain concerns, these upgrades are also expected to enhance the aircraft's combat capability.

B-2 Spirit Bomber

The B-2 is a multirole heavy bomber with stealth characteristics, capable of employing nuclear and conventional weapons. The aircraft was produced in limited numbers to provide a low observable (i.e., stealth) capability to complement the B-1 and B-52 bombers. Its unique stealth capability enables the aircraft to penetrate air defenses. The Air Force has 21 B-2 aircraft in its inventory, and the average age is about 10 years. The B-2 was deployed to support both Operation Enduring Freedom in Afghanistan and Operation Iraqi Freedom. The B-2 is expected to remain in the Air Force's inventory until 2058, so there are no immediate plans to replace the aircraft.

Figure 52: B-2 Spirit Bomber



Source: Defense Visual Information Center.

Condition

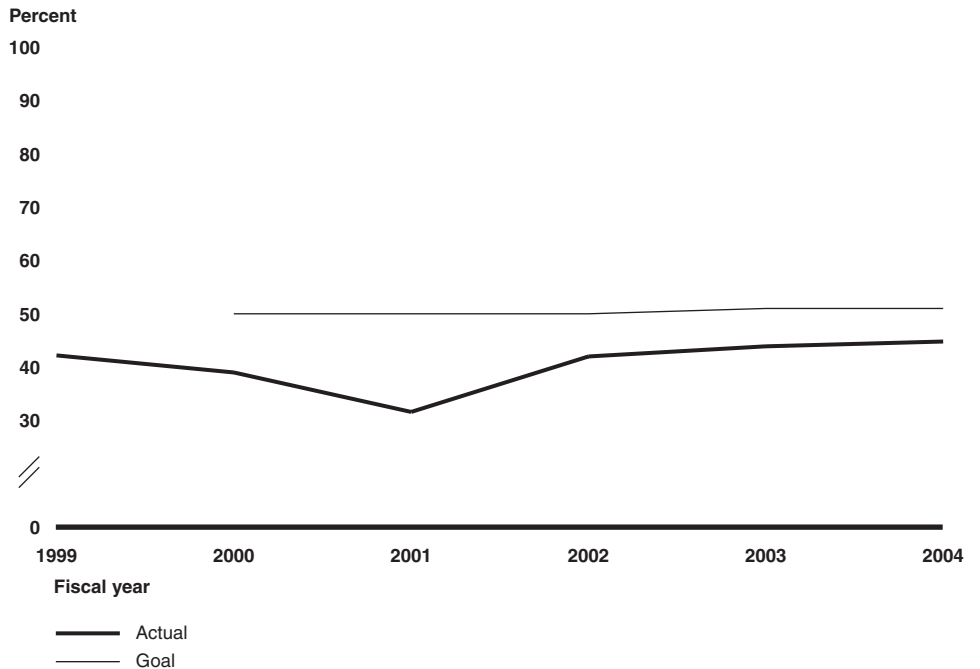


For the reasons associated with maintenance of stealth characteristics that we identified in our December 2003 report,²⁶ we continue to assess the condition of the B-2 as yellow. As shown in figure 53, the B-2 did not consistently meet the Air Force mission capable goal of 50 to 51 percent between fiscal years 1999 and 2004.²⁷ Officials stated that the small B-2 fleet size increases the difficulty in achieving goals, noting that a change in the mission capable status of one aircraft results in about a 7 percent change in the overall mission capable rate; however, when viewing other metrics, the B-2 condition is comparable with other bombers. Maintenance of stealth characteristics continues to be the primary driver of lower mission capable rates, and the Air Force is continuing to implement solutions. Despite difficulties associated with stealth maintenance, the B-2 is capable of accomplishing its wartime missions, achieving mission capable rates of 64 percent for Operation Enduring Freedom and 73 percent during the initial months of Operation Iraqi Freedom.

²⁶GAO-04-112.

²⁷The Air Force did not have a mission capable goal for the B-2 in fiscal year 1999.

Figure 53: Average Mission Capable Rates for Air Force B-2 Spirit Bombers, Fiscal Years 1999 - 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy for the B-2 as green because the Air Force has developed and funded the strategy for sustaining the B-2 inventory. The Air Force funded and continues to implement its Alternate High Frequency Material modification, which reduces the number of steps and the overall length of time required to conduct stealth maintenance. Thus far, three aircraft have received the modification, and the entire fleet has been funded and scheduled to receive the upgrade by the end of the decade. Other areas of concern include cracking on the aft deck and cracking in the windshield. For the aft deck cracks, officials stated that the extremely high temperatures from the engine cause the cracking, and have fielded kits to stiffen the aft decks, making them less affected by the extreme heat. For windshield cracks, officials stated that redesigning the spacing of drill holes will address the problem; delivery of the new windshields is scheduled to begin in late 2005. Additionally, the Air Force

has funded and is implementing improvements in B-2 connectivity and interoperability, to include integrating advanced weapons.

Long-Term Program Strategy and Funding



We assessed the long-term program strategy for the B-2 as green because the Air Force is addressing immediate issues for the aircraft while concurrently developing and funding longer-term solutions. In addition to continuing efforts to address stealth maintenance and aft deck cracks, the Air Force is also addressing the issue of diminishing manufacturing sources. Officials stated that technological advancements and the small size of the B-2 fleet are a disincentive for manufacturers to continue making B-2 unique parts. To compensate, the Air Force is modernizing components and systems within the B-2, developing internal processes to contract out management of B-2 unique parts, and closely monitoring all parts to ensure that the supply chain has ample time to adjust.

C-5 Galaxy Transport

The C-5 Galaxy is the largest Air Force transport aircraft, and can carry large cargo items over intercontinental ranges at jet speeds and can take off and land in relatively short distances. The C-5 is one of only two aircraft that can carry very large military equipment. With aerial refueling, the aircraft's range is limited only by crew endurance. The first C-5 was delivered in 1970. There are 112 C-5 aircraft in the Air Force's inventory, and their average age is 26 years. Although the C-5 is expected to remain in service through 2040, the exact length of service and composition of the C-5 fleet is dependent upon the Mobility Capabilities Study²⁸ and the Quadrennial Defense Review, which were not completed at the time of our review.

²⁸The Mobility Capabilities Study is a DOD effort to address the size of the required number of mobility airframes and aircrews necessary to support implementation of the National Defense Strategy.

Figure 54: C-5 Galaxy Transport Aircraft



Source: Defense Visual Information Center.

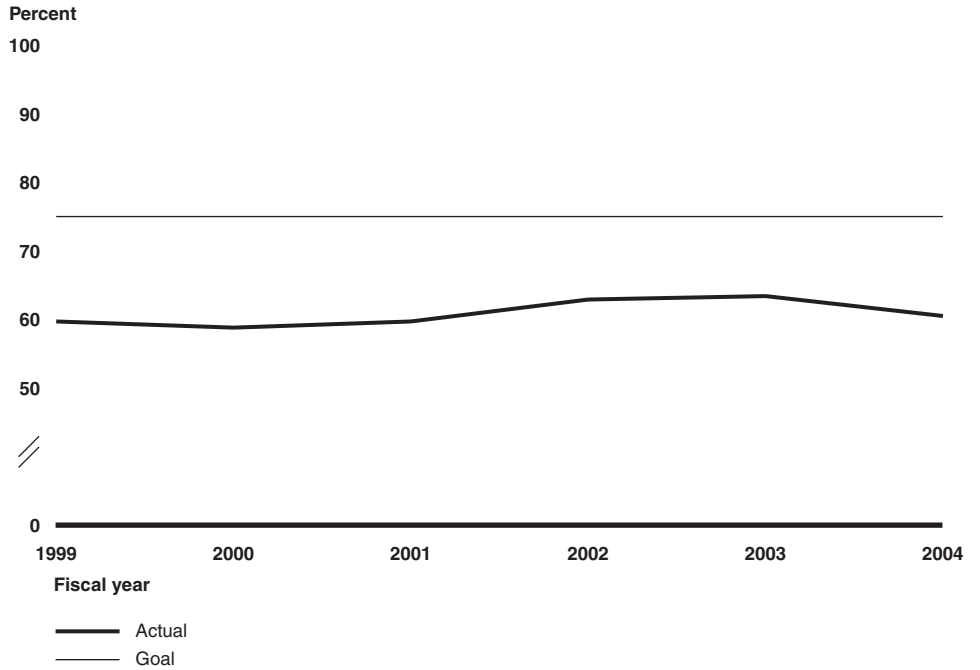
Condition



For the reasons identified in our December 2003 report,²⁹ we continue to assess the condition of the C-5 as yellow. As shown in figure 55, mission capable rates for the C-5 consistently remained below Air Force goals between fiscal years 1999 and 2004. Officials stated that the size and age of the aircraft make the C-5 maintenance intensive, and provided the example of fatigued metal and adhesives, which take time to replace. They further stated that the age of the C-5 makes it difficult to find manufacturing sources for some parts, particularly avionics and engine components. Additionally, the avionics systems and engines are noncompliant with upcoming global airspace and air traffic requirements, potentially limiting where and how the aircraft can be used. Despite these challenges, officials stated that the C-5 can currently perform its missions, including providing transport for tsunami relief efforts and moving supplies for operations in Iraq and Afghanistan.

²⁹GAO-04-112.

Figure 55: Average Mission Capable Rates for Air Force C-5 Galaxy Transport Aircraft, Fiscal Years 1999 - 2004



Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the near-term program strategy for the C-5 as yellow because of delays and funding shortages in key modernization efforts. The two modernizations for the C-5 are to improve avionics and engines; avionics upgrades must occur before engine modernization can begin. When complete, the programs are expected to address many manufacturing source issues, ensure compliance with global air traffic standards, and increase the aircraft's capability. However, officials stated that the avionics upgrades are experiencing software integration problems, resulting in a delay of at least 3 months and cost increases of \$20 million. Since engine modernization is predicated on avionics upgrades, the costs for engine modernization have also increased by \$30 million. Additionally, after a projectile attack damaged a C-5 during Operation Iraqi Freedom, officials stated that defensive systems became a top priority, and the Air Force requested and received funding through fiscal year 2005 supplemental

appropriations to upgrade defenses against infrared guided surface-to-air missiles for 51 C-5 aircraft.

Long-Term Program Strategy and Funding



We assessed the Air Force's long-term strategy for the C-5 as yellow because requested funding is inconsistent with long-term requirements to sustain and modernize the inventory. With upgrades to avionics and engines, officials stated that the C-5 could last through 2040. The Air Force has requested funding for engine upgrades for the entire fleet of 112 C-5 aircraft; however, the Air Force has only funded the procurement and installation of avionics upgrades for 59 aircraft, resulting in 53 aircraft not receiving the necessary avionics upgrades to support the new engines. Officials stated that the Air Force remains uncertain about the size of the final C-5 fleet and whether to fund the remaining C-5 upgrades, but will have a better idea following the completion of the Mobility Capabilities Study.

KC-135 Stratotanker

The KC-135 is among the oldest aircraft in the Air Force's inventory and represents 90 percent of the aircraft in the tanker fleet. Its primary mission is air refueling fixed-wing aircraft and it supports Air Force, Navy, Marine Corps, and allied aircraft. There are three KC-135 variants currently in the fleet: the E, R, and T models. Each model is a reengined version of the original KC-135A. Of these three variants, the E model belongs to the Air Force Reserve and Air National Guard. The first KC-135 was delivered in June 1957. There are 531 KC-135 aircraft in the Air Force's inventory and the average age is about 44 years. Currently, there is no replacement

Figure 56: KC-135 Stratotanker



Source: Defense Visual Information Center.

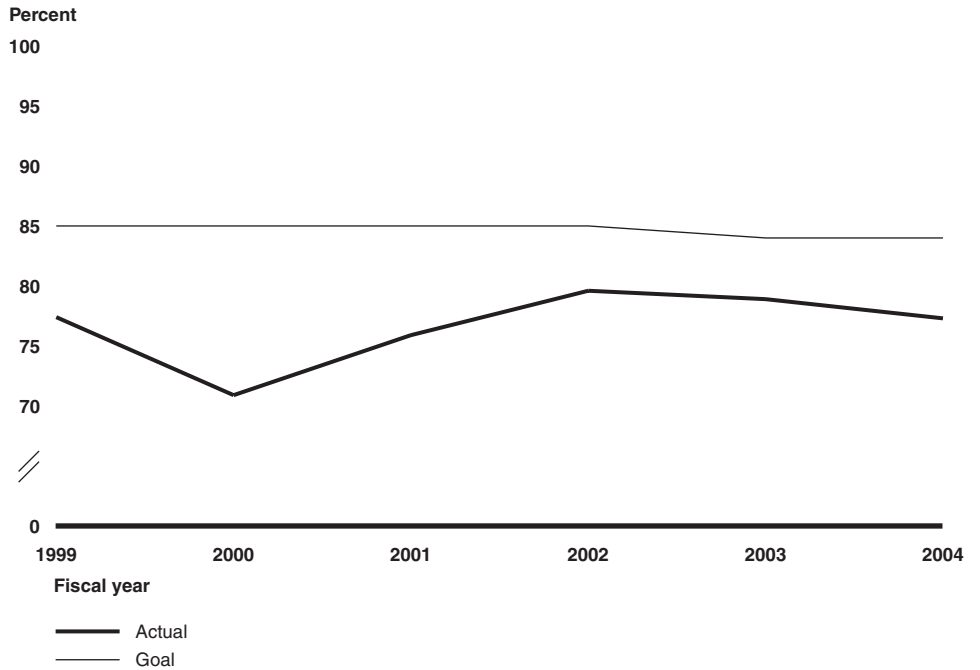
Condition



Consistent with our December 2003 report,³⁰ we assessed the condition of the KC-135 aircraft as yellow because, as shown in figure 57, it has not met its mission capable goals and issues associated with age and corrosion continue to be a concern. Officials stated that age is the primary driver of KC-135 maintenance issues, and that maintainers discover new problems with the aircraft every time it undergoes scheduled depot maintenance. Age-related issues with the aircraft include fuel bladder leaks, parts obsolescence, and problems with the landing gear's steel brakes. Corrosion has regularly been discovered in new areas on the aircraft, requiring increased amounts of depot maintenance time. The Air Force has yet to determine the extent of problems caused by newly discovered corrosion. The older variants also have a higher incidence of problems; for example, the Air Force removed 29 KC-135E aircraft from flight status due to engine strut problems and corrosion.

³⁰GAO-04-112

Figure 57: Average Mission Capable Rates for Air Force KC-135 Stratotanker Aircraft, Fiscal Years 1999 - 2004




Source: GAO analysis of military service data.

Near-Term Program Strategy and Funding



We assessed the Air Force's near-term strategy for the KC-135 as yellow because age-related maintenance issues are expected to increase and the severity of potential age-related issues remains unknown. Although officials stated that maintenance problems with the aircraft are currently manageable during programmed depot maintenance, they expect the number of maintenance man-hours to increase by 2.5 percent each year. Officials also stated that the severity of potential problems from newly discovered corrosion remains unknown, so the potential for additional maintenance requirements is likely to occur. Officials further stated that the effects of KC-135 operations to support Iraq and Afghanistan are still unknown, but the Air Force has instituted additional inspections and procedures to address potential effects associated with higher usage. The only major modification for the KC-135, Global Air Traffic Management

 avionics system upgrades, remains on schedule and is fully funded.

Long-Term Program Strategy and Funding

We assessed the Air Force's long-term strategy for the KC-135 as red because the future of the KC-135 fleet and the Air Force's tanker strategy are unknown. Before acquiring new tankers, the Air Force must complete a Recapitalization Analysis of Alternatives, which is a study to narrow the field of possible future tanker options. Originally scheduled for completion in December 2004, the analysis has been delayed until at least August 2005. Regardless of the option, officials stated that all recapitalization efforts will require use of the KC-135 in the near term and delays in fielding a replacement exacerbate problems in maintaining the existing fleet over the long term, as well as delaying modernization efforts that are predicated on the replacement time line. In fiscal year 2005, \$100 million was appropriated for a tanker replacement transfer fund, and \$9.7 billion has been requested for the tanker replacement program in DOD's 2006 Future Years Defense Program. For the six Air Force aircraft in this appendix, fiscal year 2004 data are through July 2004.

Agency Comments from the Department of Defense



ACQUISITION,
TECHNOLOGY
AND LOGISTICS

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

SEP 26 2005

Mr. William Solis
Director, Defense Capabilities and Management
U.S. Government Accountability Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Mr. Solis:

This is the Department of Defense (DoD) response to the GAO draft report, GAO-05-978 'MILITARY READINESS: DOD Needs to Identify and Address Gaps and Potential Risks in Program Strategy and Funding Priorities for Selected Equipment,' dated August 24, 2005 (GAO Code 350548).

The DoD partially concurs with one recommendation, and nonconcur with one recommendation. Specific comments on each recommendation are enclosed. Technical comments regarding the assessments made in the appendices are also provided in the attachment.

We appreciate the opportunity to comment on the draft report.

A handwritten signature in cursive script that reads "Nancy L. Spruill".

Nancy L. Spruill
Director, Acquisition Resources
and Analysis

Enclosure:
As Stated



GAO DRAFT REPORT - DATED August 24, 2005
GAO CODE 350548/GAO-05-978

"MILITARY READINESS: DOD Needs to Identify and Address Gaps and Potential Risks in
Program Strategy and Funding Priorities for Selected Equipment"

DEPARTMENT OF DEFENSE COMMENTS
TO THE RECOMMENDATIONS

RECOMMENDATION 1: The GAO recommended that, after the Department completes its Quadrennial Defense Review, the Secretary of Defense, in consultation with the Secretaries of the Services, reassess the near and long-term program strategies for sustaining and modernizing key equipment, particularly those items not covered by 10 U.S.C. 2437, to ensure that the plans are complete and that the items are sustainable until they reach the end of their serviceable life or a replacement system is fielded. Specifically, this reassessment should:

- detail the strategies to sustain and modernize key equipment systems until they are retired or replaced;
- report the costs associated with the sustainment and modernization of key equipment and identify these funds in the Future Years Defense Program; and
- identify the risks involved in delaying or not fully funding the strategies, and the steps the Department is taking to mitigate the associated risks, for those strategies that are delayed or are not fully funded. (Pages 32/GAO Draft Report)

DOD RESPONSE: Partially concur. Through the current Planning, Programming, Budgeting and Execution (PPBE) processes, the Department is already executing an annual procedure to reassess program strategies to ensure equipment sustainment and modernization can support the most recent Defense strategy. The PPBE process ensures that, at the corporate Department of Defense level, the Future Years Defense Program developed each year balances operational, recapitalization/modernization, maintenance, manning, and facilities requirements in order to accomplish the national defense mission. The review for the FY 2007 President's Budget is already taking place, and does not require completion of the Quadrennial Defense Review in order to reassess equipment sustainment and modernization plans. Reviews consider strategies and costs to sustain and modernize equipment, and the risks incurred by not fully funding those strategies. The resulting President's Budget reflects the Department's best assessment of a balanced, fully funded budget that most efficiently accomplishes our national security mission, within our limited resources.

RECOMMENDATION 2: The GAO recommended that the Secretary of Defense provide the information bulleted in Recommendation 1 in an annual report to Congress at the same time the Department submits its annual budget request. (Page 32/GAO Draft Report)

DOD RESPONSE: Nonconcur. The annual Defense Budget represents a balanced program, within the resources available, as a result of the process described in the DoD response to

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Defense

Recommendation 1. The strategies to sustain and modernize key equipment systems, and the costs associated with the sustainment and modernization are already provided in the budget documentation submitted with each year's President's Budget. The draft recommendation would also require the Department to identify the risks involved in delaying or not fully funding the strategies. When the Department submits the President's Budget, the overall strategy for accomplishing the national defense mission is fully funded. The risks associated with alternative resource allocations for specific equipment systems have been fully considered. Allocating additional resources to equipment programs may require diversion of resources from other functional areas, such as personnel, construction, or research and development. The overall balance of the Defense program, within limited resources, is our foremost concern. Each year's President's Budget attempts to reflect this balance, and our budget documentation details the strategies and costs. Therefore, all key equipment items will be fully funded, within available resources, at appropriate levels to accomplish our mission. Submitting an additional report concurrent with the annual budget would be a duplication of effort.

Technical Comments
DRAFT GAO Report GAO-05-978, GAO Code 350548

AIR FORCE TECHNICAL COMMENTS

F-16 Fighting Falcon

Issue: Page 105, Condition paragraph, line 6. Draft Report States: The sentence reading: "Officials stated that the most significant factor affecting the F-16 cracks, which occur mostly on older aircraft because of the stress caused by repeatedly landing without dropping its twelve 2,000 pound bombs." is incorrect.

Change to read: Officials stated that the most significant sustainment factor affecting the F-16 are structural cracks resulting from frequent operations near maximum gross weight limitations, with older aircraft being more susceptible.

At absolute minimum, need to change "twelve" to "two" as an F-16 aircraft is incapable of carrying 24,000 pounds of bombs.

C-5 Galaxy Transport

Issue: Page 111, general paragraph, line 3.

Delete the sentence: "The C-5 provides a unique capability in that it is the only aircraft that can carry any piece of Army equipment, including a 74-ton mobile bridge" and replace with "The C-5 is one of only two aircraft in the Air Force inventory that can carry outsized equipment."

Rationale: Many aircraft can carry Army equipment. However, the C-5 and C-17, which are complementary, are the only two weapon systems capable of transporting Army outsized equipment.

Issue: Page 111, general paragraph, line 9.

Delete: ", which is expected to be complete in the summer of 2005,"

Rationale: Study has not completed.

Issue: Page 111, paragraph on "Condition," line 2.

Delete the sentence: "As shown in figure 54, mission capable rates for the C-5 consistently remained below the Air Force stated goal of 75 percent between fiscal years 1999 and 2004" and replace with "As shown in figure 54, mission capable rates for the C-5 consistently remained below Air Force goals between fiscal years 1999 and 2004."

Rationale: It is best to discuss low mission capable rates in general terms since there are wide variances between users. For instance, the Air Force wartime goal is 75 percent while peacetime goals vary between active duty units (75%) and reserve component units (55%).

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B-2 Spirit Bomber

Issue: Page 110, Near-Term Program Strategy and Funding, line 10.

Change the last sentence to read: "For windshield crack, officials stated that redesigning the spacing of drill holes will address the problem: delivery of new windshields is scheduled to begin in late 2005."

Rationale: The new B-2 windshields will not be delivered by the end of 2005.

Issue: Pages 109-110.

Comment: The entire B-2 section focuses on sustainment issues and does not address any of the plans/programs to increase the combat capabilities of the B-2. This does not provide a complete picture of the B-2 program.

B-1B Lancer Bomber

Issue: Pages 107-108.

Comment: Change all references from B-1B to B-1.

Rationale: The Air Force has changed the aircraft's name to B-1

Issue: Page 108, Long-Term Program Strategy and Funding, line 8.

Change sentence to read: "To address these issues, the Air Force has funded effort to modernize and upgrade B-1 components, to include cockpit flight instrument displays and navigation systems."

Rationale: The Vertical Situation Display (VSD) modification replaces the pilot and copilot's flight instrument displays, not all situational displays.

Issue: Page 107, Paragraph 1, line 6.

Change sentence to read: "keep the B-1B in use through at least 2040."

Rationale: This is the correct service life projection and is consistent with the DODIG Exit Briefing.

F-15 Eagle and Strike Eagle

Pages 102, Paragraph 1, Line 7:

Change sentence: "ranging from about 21 years to 27 years," to read "Ranging from about 21 to 26 years".

Rationale: This is the correct service life projection and is consistent with DODIG Exit briefing.

KC-135 Stratotanker

Issue: Pages 115, Paragraph 1, Line 5.

Delete sentence: "...they expect the number of maintenance man-hours to increase by 2.5 percent each year."

Rationale: This statement is not verifiable.

NAVY TECHNICAL COMMENTS

AH-1W Super Cobra Helicopter

Issue: Page 21, Table 4.

Comment: We do not understand the basis for the \$63.6 million unfunded requirement listed in Table 4. It is assumed that \$50 million is the same requirement to fund NRE for Build new Z called out on page 80. NAVAIR has requested clarification from the GAO audit team and is awaiting their reply.

Comment: Page 79, the correct inventory for AH-1W is **179**, not 180.

AV-8B Harrier Jet

Comment: Page 77, the correct inventory for AV-8B is **154**, not 156.

CH-46E Sea Knight Helicopter

Comment: Pages 9, 20, and 23 include statements regarding the lack of repair parts due to aircraft age. The first-time fill rate for H-46 spares is at historic highs. Also, the A/C sortie rate and Mission Capable rates compare favorably with any other rotary wing A/C in the Naval Aviation Enterprise. This would not be possible if there were spare part availability problems. While a CH-46E parts problem in the future cannot be ruled out, its supply support posture is currently green.

Issue: Page 81, "Condition" paragraph.

Comments: The paragraph references 180 engine upgrades. The actual number of upgrades is 234, as of 30 August 2005.

Issue: Page 82, "Near-term Program Strategy and Funding paragraph.

Comments: The statements about repair parts shortages and availability are misleading. First-time fill rates for supply parts are at historically high levels and the high readiness levels in OIF bear this out. While original production lines have been shut down at the OEM, we still have sources for all key repair parts. If a source goes away, a new one would be qualified. This is a common occurrence in aviation industrial support.

CH-53E Super Stallion Helicopter

Issue: Page 5, "Results in Brief" paragraph, 3rd sentence.

Draft Report States: "For example, the Marine Corps' CH-53E helicopter received a red rating for its *near-term* program strategy and funding plan because the service may be unable to meet its near-term requirements due to potential aircraft and repair parts shortages".

Change to Read: "For example, the Marine Corps' CH-53E helicopter received a red rating for its *long-term* program strategy and funding plan because the service may be unable to meet its near-term requirements due to potential aircraft and repair parts shortages". Table 1 on page 7, and page 85 of Appendix II state the near-term program strategy and funding plan as yellow.

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Issue: Page 20, Table 3.

Comment: Table 3 utilizes the reason, "Strategy not funded in DOD's fiscal year 2006 budget" to categorize the CH-53E. This is not entirely accurate. Sustainment strategy for the CH-53E is funded to start FY2006 and continue throughout the FYDP.

Issue: Page 84, "Condition" paragraph.

Comments: This paragraph implies that high utilization has caused structural cracks; this is not correct. The tail pylon crack has been an ongoing issue long before OIF/OEF operations, as well as a fatigue issue concerning the transition section bulkhead that is related to aircraft flight hours. OIF and OEF operations and increased utilization have accelerated the need to repair these areas, and repair kits are available, but the operations have not caused the issues.

Issue: Page 85, "Near-term Program Strategy and Funding" paragraph, last sentence.

Comments: The funding identified for diagnostic systems and engine upgrades as unfunded 2006 priorities is actually **\$31.0 million**, not \$35.6 million. The additional \$4.6 million includes other unfunded issues.

Issue: Page 85, "Long-term Program Strategy and Funding" paragraph.

Comments: Heavy Lift Replacement requirements are stable, and were approved through the JROC in December 2004.

F/A-18 Hornet/Super Hornet Aircraft

Issue: Page 92, First Paragraph, inventories.

Comment: The correct inventory for F/A-18 Hornet/Super Hornet is **914**, not 904. For other models: F/A-18A – **123**, not 142; F/A-18B – **28**, correct; F/A-18C – **396**, correct; F/A-18D – **139**, not 141; F/A-18E – **102**, not 93; F/A-18F – **126**, not 104

Issue: Page 92, "Condition" paragraph.

Comment: The last two sentences should be amended and an additional sentence added as follows (changes in italics and bolded):

"This effort addresses the predictable rate of wear and deterioration on the aircraft due to factors such as carrier take-off and landings *and contributes to overall life extensions*. The aircraft is not available for operations during the 1 year scheduled for this process." ***During this period the Navy takes advantage of aircraft time out of service to conduct scheduled maintenance and other modifications on those aircraft.***

Issue: Page 93, "Long-term Program Strategy and Funding" paragraph.

Comment: The ending of the last paragraph should read:

"Program officials confirmed that *another* delay in arrival of the Joint Strike Fighter *may require the F/A-18 program to seek other alternatives to meet requirement goals, such as, replace more center barrels on Hornets, management of aircraft fatigue life, or additional procurement of super hornets*. Moreover, *fatigue life* is not the only factor used when determining the expected service life of an aircraft; flying hours and takeoff and landings also impact the F/A 18's life expectancy. If Hornets are required to operate longer..."

P-3 Orion Aircraft

Issue: Pages 98 and 99.

Comment: Some of the impact statements may, if taken out of context, seem misleading. For example, the first sentence of the Condition paragraph states, "The Orion is not available in sufficient numbers to meet day-to-day Navy requirements." This statement should be addressed by CNAF. It's possible that the Fleet is meeting deployed requirements, but not all at-home training requirements. Does this mean they are not meeting day-to-day requirements? Also, the impact statements are valid only for the snapshot in time that the interviews were conducted. For example, the P-3 is rated as red for long-term program strategy and funding. Since we can only comment to Congress on program of record (PB06, in this case), then the statement that shows the AMIP program "has not been fully approved, nor has it been funded," (page 99) is only partially true. Part of the program has Navy support, but through the NAVCOMPT07 budget cycle, a cycle not yet recognized by OSD or Congress, and therefore not part of the Program of Record. The bottom line is that the program has evolved naturally over the preceding 7 months and the statements are correct if they have a caveat that identifies the snapshot in time of the interviews (around January 2005).

ARMY TECHNICAL COMMENTS

Bradley Fighting Vehicle/Abrams Tank

Issue: Page 9, Line 15.

Draft Report States: "For example, the Army's Bradley Fighting Vehicle received a red rating because the Army has not fully identified the future requirements and funding for this item."

Comment: The GAO report uses only the Base budget as a measurement for funding strategy. The report mentions the use of supplemental funding and PBD 753 but does not refer to it in any explanations of the system strategies. Both (and the M113) were heavily funded through PBD 753, as indicated by the PBD direction below.

(U) Abrams/Bradley Upgrade. The Army currently has three distinct variants of the Abrams Tanks and Bradley Fighting Vehicle fleets. The additional funding coupled with Base programs improves the Army's Heavy Brigade Combat Team (HBCT) modular force/modernization posture to 16 (M1A2 SEP/M2A3 Bradley)/ 14 (M1A1 AIM/M2A2 ODS Bradley)/ 5 (M1A1 Heavy Armor/M2A2 Bradley) HBCTs. Funding provides the Army with a more balanced lethal, survivable and sustainable heavy combat force.

(U) M113, Selected Procurement and MODS. Procures 1,075 M113A3 Family of Vehicles (FOV) – M1068A3, M577A3, M113A3, and M1064A3 to meet M113 shortfalls in 30 HBCTs, 12 FIRES BDEs, 12 Mine Clearance Companies, 70 Sapper Companies, and 56 Mobility Augmentation Companies.

OH-58D Kiowa Helicopter

Issue: Page 26, Table 5.

Draft Report States: "Replacement systems are delayed or not identified."

Comment: The Chief of Staff approved the requirement for 368 Armed Reconnaissance Helicopters (ARH) to replace the obsolete OH-58D fleet during the FY05-11 period. The First Unit Equipped date is Sept 08 and the source selection board went with the Bell version for the ARH (it was signed about three weeks ago). The report should be updated with this current information.

CH-47D/F Chinook Helicopter

Issue: Page 60, Condition: line 7.

Comment: "While most Army helicopters remain in theater...." This line suggests the entire deployed CH-47 fleet remained in theater for more than one rotation. This is not true. To date only one CH-47 Heavy Helicopter Company (12 aircraft) left their aircraft in theater for back to back rotations; however, current shortages of CH-47 aircraft and the requirement to fill nearly simultaneous competing priorities with limited resources may require additional SBE of CH-47 aircraft.

OSD COMMENTS

Bradley Fighting Vehicle

Issue: Page 22 and 45.

Draft Report States: "For example, the Army requested \$1.4 billion in the fiscal year 2005 supplemental in order to purchase 93 new Bradley Fighting Vehicles and recapitalize 554 others..."

Recommended Change: "For example, the Army requested \$1.4 billion in the fiscal year 2005 supplemental in order to accelerate recapitalization of the Bradley Fighting Vehicles; producing 93 vehicles to replace combat losses and 554 to meet the needs of Army modernization...", or remove the BFV as an example entirely.

Rationale: The Bradley Fighting Vehicle is no longer in production; the FY 2005 supplemental pays for recapitalization of vehicle hulls to replace combat losses, reduce fleet age, or upgrade the existing fleet to meet the needs of modularity. The logic behind this example is flawed as BFV recapitalization is part of the Army modularity/modernization plan. Part of that plan is paid for initially with supplemental funding, and starting in FY 2007 it will be incorporated into the base budget.

M113 Armored Personnel Carrier

Issue: Page 47, Army M113 inventory. "The Army originally introduced the M113 in 1960 and the current fleet of A2 and A3 variants, totaling 6,672, has an average age of almost 16 years."

Recommended Change: "The Army originally introduced the M113 in 1960 and the current fleet of A2 and A3 variants, totaling approximately 16,000, has an average age of almost 16 years."

Rationale: The GAO report appears to have only included the A3 variant, not the A2 which they referenced in the same sentence. The average age is very close to that already listed even though the inventory dramatically increased.

Assault Amphibian Vehicle

Issue: Page 71, AAV equipment. "The average age of the vehicle is 28.6 years"

Recommended Change: "The average age of the vehicle is 19 years which includes compensating for a 1985 Service Life Extension Program (SLEP) which reset the age to zero or restarted the age calculations."

Rationale: The military undertakes upgrades, SLEPs and other modifications that in some cases restarts the age calculations or in others extends the service life. In this case, the GAO did not take that into account in listing the original average age.

AV-8B Harrier Jet

Issue: Page 77, AV-8B. "There are 156 in inventory"

Recommended Change: "There are a total of 154 aircraft broken out as follows: 131 combat capable aircraft, 17 non-combat capable training aircraft, and 6 in storage."

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Rationale: There are 131 combat capable AV-8B's; 38 original night attack, and 93 radar variants (both original and remanufactured). The 16 active 2-seat trainer aircraft, TAV-8B's, are not combat capable and should not be included in combat assumptions. An additional unsupportable 5 single seat and 1 TAV-8B, are in storage and may be upgraded in the near future.

F/A-18 Hornet/Super Hornet Aircraft

Issue: Page 93, F/A-18A Near-Term Program Strategy. "The Navy is unable to fund improved detection and targeting systems for the (legacy) Hornet, for example, the Advanced Targeting Forward Looking Infrared system, and the Joint Helmet Mounted Cueing System."

Recommended Change: Remove the sentence

Rationale: The Navy has fully funded the Advanced Targeting Forward Looking Infrared system (ATFLIRS) for legacy Hornets (all Super Hornets have the ATFLIR) so the GAO statement is incorrect. The JHMCS is fully funded for FA-18 aircraft lots 13 and higher. Lots 12 and below (about 25% of the total FA-18A,B,C,D Hornets) are not funded and will be decided upon in the FY2008 budget.

GAO Contact and Staff Acknowledgments

GAO Contact

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Acknowledgments

In addition to the contact named above, the following individuals also made major contributions to the report: David Schmitt, Assistant Director; Patricia Lentini; Vipin Arora; Janine Cantin; Alissa Czyz; Barbara Hills; Barbara Gannon; Stanley Kostyla; Josh Margraf; Brian Mateja; Kimberly Mayo; Jim Melton; Kenneth Patton; Malvern Saavedra; and John Trubey.

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