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Report to Congressional Requesters

December 2003

MILITARY READINESS

DOD Needs to Reassess Program Strategy, Funding Priorities, and Risks for Selected Equipment

GAO-04-112

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Highlights

Highlights of GAO-04-112, a report to congressional requesters

Why GAO Did This Study

GAO was asked to assess the condition of key equipment items and to determine if the services have adequate plans for sustaining, modernizing, or replacing them. To address these questions, we selected 25 major equipment items, and determined (1) their current condition, (2) whether the services have mapped out a program strategy for these items, (3) whether current and projected funding is consistent with these strategies, and (4) whether these equipment items are capable of fulfilling their wartime missions.

What GAO Recommends

GAO recommends that the Secretary of Defense reassess program strategies and funding priorities for key equipment items to ensure that the equipment items are sustained until replacement items are fielded. The department should also highlight for the Congress risks involved in sustaining these equipment items and steps the department is taking to address those risks. In its written comments on a draft of this report, the department partially concurred that it needed to reassess program strategies and funding priorities, but did not agree that it needed to provide the Congress with additional information on the potential risks. Because the department did not agree, the report includes a Matter for Congressional Consideration suggesting that the Congress may wish to require the department to provide this information.

www.gao.gov/cgi-bin/getrpt?GAO-04-112.

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.

What GAO Found

Many of our assessments of 25 judgmentally selected critical equipment items indicated that the problems or issues we identified were not severe enough to warrant action by the Department of Defense, military services, and/or the Congress within the next 5 years. The condition of the items we reviewed varies widely from very poor for some of the older equipment items like the Marine Corps CH-46E Sea Knight Helicopter to very good for some of the newer equipment items like the Army Stryker vehicle. The problems we identified were largely due to (1) maintenance problems caused by equipment age and a lack of trained and experienced technicians, and (2) spare parts shortages.

Although the services have mapped out program strategies for sustaining, modernizing, or replacing most of the equipment items we reviewed, some gaps exist. In some cases, such as the KC-135 Stratotanker and the Tomahawk missile, the services have not fully developed or validated their plans for the sustainment, modernization, or replacement of the items. In other cases, the services' program strategies for sustaining the equipment are hampered by problems or delays in the fielding of replacement equipment or in the vulnerability of the programs to budget cuts.

For 15 of the 25 equipment items we reviewed, there appears to be a disconnect between the funding requested by the Department of Defense or projected in the Future Years Defense Program and the services' program strategies to sustain or replace the equipment items. For example, we identified fiscal year 2003 unfunded requirements, as reported by the services, totaling $372.9 million for four major aircraft—the CH-47D helicopter, F-16 fighter aircraft, C-5 transport aircraft, and CH-46E transport helicopter.

The 25 equipment items we reviewed appear to be capable of fulfilling their wartime missions. While we were unable to obtain sufficient data to definitively assess wartime capability because of ongoing operations in Iraq, the services, in general, will always ensure equipment is ready to go to war, often through surging their maintenance operations and overcoming other obstacles. Some of the equipment items we reviewed, however, have capability deficiencies that could degrade their wartime performance in the near term.

Contents

Abbreviations

AAV	Assault Amphibian Vehicle
AAW	anti-air warfare
ACC	Air Combat Command
ASW	anti-submarine warfare
ATGM	Anti-Tank Guided Missile Vehicle
CALCM	Conventional Air Launched Cruise Missile
CBR	Center Barrel Replacement
CV	Commander Vehicle
DOD	Department of Defense
DPICM	Dual Purpose Improved Convention Munition
EFV	Expeditionary Fighting Vehicle (formerly the AAAV—Advanced Amphibious Assault Vehicle)
ERAM	Extended Range Active Missile
ESV	Engineer Squad Vehicle
FLE	Fatigue life expenditure
FSV	Fire Support Vehicle
FYDP	Future Years Defense Plan
GMLRS-	Guided Multiple Launch Rocket System
HEMTT	Heavy Expanded Mobility Tactical Truck
HME	hull, mechanics, and electrical
ICAPIII	Improved Capability 3rd Generation
ICV	Infantry Carrier Vehicle
JDAM	Joint Direct Attack Munition
LAR	Light Armored Reconnaissance

LAV-C2	Light Armored Vehicle-Command & Control
MC	Mortar Carrier
MEV	Medical Evacuation
MGS	Mobile Gun System
NBCRV	Nuclear Biological and Chemical Reconnaissance Vehicle
OMB	operation and maintenance
O&S	Operation and Support
PAC-3	Patriot Missile
QDR	Quadrennial Defense Review
RAM	Rolling Airframe Missile
RAM/RS	Reliability, Availability and Maintenance/Rebuild to Standard
RHIB	Ridged Hull Inflatable Boat
RV	Reconnaissance Vehicle
SEP	Systems Enhancement Program
SLEP	Service Life Extension Program
TACTOM	Tactical Tomahawk

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Accountability * Integrity * Reliability

United States General Accounting Office
Washington, D.C. 20548

December 19, 2003

The Honorable Ike Skelton
Ranking Minority Member
Committee on Armed Services
House of Representatives

The Honorable John Murtha
Ranking Minority Member
Subcommittee on Defense
Committee on Appropriations
House of Representatives

The Honorable Norm Dicks
House of Representatives

Many of the weapons and support equipment items in the Department of Defense's inventory were purchased in the 1970s and 1980s, and are likely to reach the end of their expected useful lives in this decade unless major modernizations are made. Equipment age as well as delays in fielding replacement systems can adversely affect maintenance costs, and ultimately, equipment readiness and wartime capabilities. The added effects of simultaneous military deployments and recent increases in operating tempo place additional stress on equipment that is, in some cases, more than 30 years old.

The department is faced with the challenges of both sustaining and transforming the current military force structure, including replacing aging equipment. The costs associated with meeting these challenges are likely to be significant. For example, a 2001 Joint Chiefs of Staff analysis of the funding needed to sustain the current force structure concluded that a procurement budget of $100 billion to $110 billion would be required annually. The President's fiscal year 2004 budget request included a total of about $72.7 billion for Defense procurement, an amount significantly less than that identified by the Joint Chiefs of Staff. In addition, the Congressional Budget Office estimated that the investment needed to develop and purchase new Defense equipment would likely increase from $137 billion in fiscal year 2004 to a peak of about $223 billion in fiscal year 2013 if cost risk is considered.[1] The impending reconstitution of equipment resulting from Operation Iraqi Freedom will also require billions of dollars. Competing for these funds for sustainment and modernization are the Department of Defense's efforts to transform its current force structure

into a force that maintains or improves its lethality but deploys faster, is lighter, and relies on information rather than brute force to defeat its adversary.

You asked us to assess the condition of key equipment items and to determine if the services had adequate plans to address identified deficiencies. Specifically, you asked that we determine which items warranted immediate attention by the department and/or the Congress. You also asked us to identify whether the department's procurement plans and projected budgets are sufficient to sustain or improve these equipment items. To address these objectives, we determined:

- the current condition of key military equipment items;
- whether the services have mapped out a long-range program strategy for sustaining, modernizing, or replacing[2] these equipment items consistent with the current condition and expected service life;
- whether current and projected funding for these equipment items through fiscal year 2009 is consistent with the services' program strategies for sustaining, modernizing, or replacing the equipment; and
- whether these equipment items are generally capable of fulfilling their wartime missions.

As agreed with your offices, we worked with the military services to judgmentally select 25 equipment items that are key in terms of meeting the strategy outlined in the September 2001 Quadrennial Defense Review. We selected approximately two weapons equipment items, two support equipment items, and two munitions from the Army, Air Force, Navy, and Marine Corps.[3] We relied extensively on input from the military services and prior GAO work to select equipment items that have been in use for a number of years and are critical to supporting the services' missions. The

[1] Congressional Budget Office, *The Long-Term Implications of Current Defense Plans: Summary Update for Fiscal Year 2004* (Washington, D.C.: July 2003).

[2] Modernizing refers to upgrading equipment items or replacing specific parts; 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 helicopter with the MV-22 Osprey.

[3] The 25 equipment items we selected for review include 7 Army equipment items, 6 Air Force equipment items, 7 Navy equipment items, and 5 Marine Corps equipment items.

25 equipment items we selected were those that the military services agreed were critical to meeting current capability requirements and defined as essential to meet the strategy laid out under the Quadrennial Defense Review. Our assessments apply only to the 25 equipment items we reviewed. Consequently, the results of our assessments cannot be projected to the entire inventory of Department of Defense equipment.

Our analysis of the condition of these 25 equipment items focused on a number of key metrics, including equipment age, performance, and use from fiscal year 1998 to fiscal year 2002. To assess condition, we obtained data on equipment age and expected service life and other specific service performance indicators such as mission capable rates,[4] utilization rates,[5] and various other metrics. While we limited our observations and assessments to equipment in the active duty inventory, the readiness data and other metrics we collected from the military services also includes equipment in the guard and reserve forces. Our review of the program strategy for these equipment items focused on the extent to which the services have developed or updated their plans for the sustainment, modernization, or recapitalization of the equipment items to the end of the items' useful service lives in order to meet mission requirements. Our review of the funding for these equipment items focused on the extent to which the services' requests for sustainment, modernization, and recapitalization funds in the current and historical defense budgets and the projected funding envisioned in the Future Years Defense Program reflect their long-range program strategies. The 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 prior year, current year, biennial budget years, and the following four years. According to Department of Defense officials, the Future Years Defense Program takes the services' priorities into consideration, balancing future investment and risk. Our review of the wartime capability of the selected equipment items focused on the extent to which each of the equipment items is capable of fulfilling its wartime mission. Because of ongoing operations in Iraq and our limited access to the deployed units and equipment performance indicators during these operations, we were unable to obtain sufficient data to definitively assess wartime capability for

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

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

all of the 25 equipment items we reviewed. Therefore, our assessments of wartime capability are limited to anecdotal evidence obtained primarily through discussions with military service officials, program managers, and equipment operators and maintainers. In some cases we were able to obtain specific data regarding wartime capability for specific equipment items; however, data availability was not consistent across all of the military services.

We met with officials from all four of the military services, one selected combatant command,[6] and several major commands. We also visited selected units and maintenance facilities to observe the equipment items during operation or under maintenance, and discussed condition and wartime capability issues with program managers and equipment operators and maintainers.

To determine which equipment items require immediate attention by the department, the military services, and/or the 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) the estimated time frame within which the problem or issue needs to be addressed. To assess the relative ranking of the 25 equipment items, we used a traffic light approach—red, yellow, or green—to indicate the existence, severity, and urgency of the problem as follows:

- Red indicates a problem or issue that is severe enough to warrant action by the Department of Defense, the military services, and/or the Congress within the next 1-3 years;

- Yellow indicates a problem or issue that is severe enough to warrant action by the Department of Defense, the military services and/or the Congress within the next 3-5 years; and

- 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 not of a severe enough nature that we believe warrant action by the Department of Defense, the military services and/or the Congress within the next 5 years.

[6] Our scope was limited to one combatant command, Pacific Command, due to the remaining combatant commands' participation in Operation Iraqi Freedom.

While we attempted to obtain consistent metrics for each of the other 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 to us from multiple sources.
Our assessments 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 four categories—condition, program strategy, funding, and wartime capability—are largely qualitative in nature, 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 do not provide color-coded assessments for the wartime capability of each equipment item in this report because, as previously mentioned, we were unable to obtain adequate data to perform a definitive assessment of wartime capabilities.

For a complete description of our methodology, see appendix I. Appendix II contains our detailed assessments for each of the 25 equipment items. We performed our review from September 2002 through October 2003 in accordance with generally accepted government auditing standards.

Results in Brief

As table 1 indicates, many of our assessments of the condition, program strategy, and funding for each of the 25 equipment items we reviewed indicate that the problems or issues we identified were not severe enough to warrant action by the Department of Defense, military services, and/or the Congress within the next 5 years. However, the table also indicates that some equipment items have severe enough problems related to condition, program strategy, and funding to warrant more immediate action by the Department of Defense, the military services, and/or the Congress. Specifically, as shown in the table, we identified problems and issues related to the Army's CH-47D, the Marine Corps' CH-46E, the Air Force's KC-135, and the Navy's EA-6B Prowler, Standard Missile-2, and Tomahawk missile that we believe warrant action within the next 1 to 3 years. The remaining items, while not yet severe enough to warrant immediate action by the Department of Defense, the military services, and/or the Congress, showed signs of problems related to condition, program strategy, or funding that, if not addressed within the next 3 to 5 years, could become severe. While we did not definitively assign a color-coded assessment of the wartime capability for each of the 25 equipment items, military service

officials, program managers, operators, and maintainers we met with identified a number of concerns that are discussed later.

Table 1: Assessment Summary

Equipment	Assessment area		
	Condition	Program strategy	Funding
Army			
Abrams Tank			
AH-64 A/D Apache Helicopter			
Stryker			
CH-47D/F Chinook Helicopter			
Heavy Expanded Mobility Tactical Truck			
Patriot Missile			
Guided Multiple Launch Rocket System			
Air Force			
F-16 Fighting Falcon Aircraft			
B-2 Spirit Bomber			
C-5 Galaxy Transport Aircraft			
KC-135 Stratotanker Aircraft			
Conventional Air Launched Cruise Missile			
Joint Direct Attack Munition			
Navy			
DDG-51Arleigh Burke Class Destroyer			
FFG-7 Oliver Hazard Perry Class Frigate			
F/A-18 Hornet/Super Hornet Aircraft			
EA-6B Prowler Aircraft			
LPD-4 Amphibious Transport Dock Ship			
Standard Missile-2 Surface-to-Air Missile			
Tomahawk Cruise Missile			
Marine Corps			
AH-1W Super Cobra Helicopter			
CH-46E Sea Knight Helicopter			
Assault Amphibian Vehicle-Personnel			
Light Armored Vehicle-Command and Control Variant			
AGM-65E Maverick Missile	[a]		

Source: GAO analysis of military service data.

[a]The Marine Corps does not track trend data such as mission capable rates or operational readiness rates for munitions as it does for aircraft or other equipment.

Condition

The condition of the selected equipment items we reviewed varies widely from very poor for some of the older equipment items like the Marine Corps CH-46E helicopter to very good for some of the newer equipment items like the Army Stryker vehicle. The three equipment items for which we assessed the current condition as red and in our opinion warrants attention within 1 to 3 years are the CH-47D helicopter, the Standard Missile-2 munitions, and the CH-46E helicopter. These items generally did not meet mission capable or operational readiness goals for sustained periods and were either older equipment items and/or had high utilization rates. The 11 items for which we assessed the condition as yellow also may have failed to meet mission capable or operational readiness goals, but to a lesser extent. Left unattended, the condition of some of these yellow items may worsen. There were various reasons for the degraded condition of these equipment items including maintenance problems due to parts or personnel inadequacies. Parts inadequacies include parts shortages, unreliable parts, or obsolete parts due to the advanced age of the equipment. Equipment operators believed a lack of trained and experienced technicians also affected equipment items' condition.

Program Strategy

Although the services have mapped out program strategies for sustaining, modernizing, or replacing most of the equipment items we reviewed, some gaps exist. In some cases, such as the KC-135 Stratotanker and the Tomahawk missile, the services have not fully developed or validated their plans for the sustainment, modernization, or replacement of the equipment items. For example, in the case of the KC-135, the Air Force developed a long-term program strategy to modernize the aging KC-135 tanker fleet but as we have previously reported[7] has not demonstrated the urgency of acquiring replacement aircraft and has not defined the requirements for the number of aircraft needed. In other cases, the services' program strategies for sustaining the equipment are hampered by problems or delays in the fielding of replacement equipment or in the vulnerability of the programs to budget cuts. As a result, the services may incur increased costs due to maintenance to sustain aging equipment items in the event that the replacement equipment is not fielded as scheduled. For example, the planned replacement equipment for the Marine Corps CH-46E helicopter (i.e., the MV-22 Osprey) has been delayed by about 3 years and is not

[7] U.S. General Accounting Office, *Military Aircraft: Observations on the Air Force's Plan to Lease Aerial Refueling Aircraft*, GAO-03-1143T (Washington, D.C.: Sept. 3, 2003).

scheduled to be fielded until 2007; as a result, the Marine Corps will have to retain more CH-46E helicopters in its inventory longer than it had planned. Similarly, procurement of the replacement equipment for the Marine Corps' Assault Amphibian Vehicle has been delayed. The program strategy for the Assault Amphibian Vehicle includes overhauls, but for only 680 of the 1,057 vehicles in the inventory.[8] Other program strategies which we assessed as yellow may need to be validated or updated because the programs are highly susceptible to budget cuts as the equipment item's mission changes. For example, planned modernization programs for Navy frigates are susceptible to budget cuts, according to Navy officials, because their future role is uncertain given the development of the Littoral Combat ship. In the meantime, the frigates are being used increasingly for homeland defense missions, yet their program strategy does not reflect that they are being used more often and in different ways.

Funding

There appears to be a disconnect between the funding requested by the Department of Defense or projected in the Future Years Defense Program and the services' program strategies to sustain or replace many of the equipment items we reviewed. According to Department of Defense officials, the Future Years Defense Program strikes a balance between future investment and program risk and takes into consideration the services' stated requirements as approved by the department. Specifically, we assessed the funding for 15 of the 25 equipment items we reviewed as either red or yellow because current and projected Department of Defense funding is not consistent with the services' stated requirements to support their program strategies for these equipment items. For example, we identified fiscal year 2003 unfunded requirements, as reported by the services, totaling $372.9 million for four major aircraft equipment items—the CH-47D helicopter, F-16 fighter aircraft, C-5 transport aircraft, and CH-46E transport helicopter.[9] We did not, however, independently verify these unfunded requirements. The most significant funding shortfalls occurred when parts, equipment upgrades, and maintenance were not fully

[8] In its written comments on a draft of this report, the department stated that they plan to upgrade an additional 327 vehicles for a total of 1,007 vehicles, assuming funding is provided.

[9] In its written comments on a draft of this report, department officials stated that the Navy lists CH-46E safety improvements as an unfunded requirement of $10 million to $14 million based upon the retirement schedule of the CH-46E and the fielding schedule of the MV-22 replacement.

funded. In addition, according to service officials, requests for funds for some older equipment items are sometimes reduced on the basis of anticipated fielding of replacement equipment items in the near future. Gaps in funding also result when fielding of the replacement equipment items is delayed and the older equipment must be sustained longer than anticipated. Funding for the older equipment items may also be a target for funding reductions to support higher service transformation priorities, such as new equipment or new technology. Other funding shortfalls occur when the services subsequently identify additional maintenance requirements that were not planned in the budget request. Army officials expressed concerns that operation and maintenance funding to sustain these aging equipment items in the future may not be sufficient to cover the costs of retaining these items in the inventory longer than expected.

Wartime Capability

Although there were some limited capabilities, according to service officials, the equipment items we reviewed are generally capable of fulfilling their wartime missions. In general the services will always ensure equipment is ready to go to war, often through surges in maintenance and overcoming obstacles such as obsolete parts, parts availability, and cannibalization of other pieces of equipment. These officials pointed out, however, that some of these equipment items have capability deficiencies that could degrade their wartime performance in the near term. For example, only 26 out of 213 Marine Corps Assault Amphibian Vehicles at Camp Lejeune had been provided enhanced protective armor kits prior to Operation Iraqi Freedom. According to Marine Corps officials at Camp Lejeune, lack of the enhanced protective armor left the vehicles vulnerable to the large caliber ammunition used by the Iraqi forces. Similarly, according to Navy officials, there is an impending negative impact on the Navy's wartime capabilities without an increase in the number of available Navy EA-6B Prowler aircraft with upgraded capabilities. Only one of the equipment items we reviewed, the Marine Corps CH-46E helicopter, could not accomplish its intended mission because of significant degradation in its lift capacity. Marine Corps officials stated, however, that they were generally satisfied with the CH-46E performance in Operation Iraqi Freedom despite its lift limitations.

We are recommending that the Secretary of Defense, in conjunction with the Secretaries of the military services, reassess the program strategies for the sustainment, modernization, and recapitalization of key legacy equipment items, and reconcile funding requests for these equipment items to ensure that the equipment will be adequately sustained until

replacement equipment items can be fielded. In reconciling these program strategies to funding requests, the Secretary of Defense should highlight for the Congress the risks involved in sustaining key legacy equipment items if adequate funding support is not requested and the steps the department is taking to address those risks. As part of this process, the Secretary of Defense should identify the key equipment items that, because of impaired conditions and their importance to meeting the department's military strategy, should be given the highest priority for sustainment, recapitalization, or replacement. To strengthen congressional oversight of the department's major equipment programs, we are also suggesting that the Congress may wish to consider having the Secretary of Defense provide an annual report, in conjunction with the department's annual budget submissions, on the condition, program strategy, and funding for major equipment items.

In written comments on a draft of this report, the Department of Defense partially concurred with our recommendation that it should reassess the program strategies for equipment modernization and recapitalization, and reconcile those strategies to the services' funding requests. However, the department did not concur with our other two recommendations that it should (1) highlight for the Congress the risks involved in sustaining key equipment items if adequate funding support is not requested and the steps the department is taking to address those risks, and (2) identify the equipment items that should be given the highest priority for sustainment, recapitalization, modernization, or replacement. Specifically, the department stated that its current budget processes and its annual budget submission to the Congress are already designed to identify, at the corporate Department of Defense level, the department's highest funding priorities. While we recognize that the budget process is designed to identify the department's highest funding priorities, the budget information presented to the Congress does not identify the trade-offs and risks associated with the department's budgeting decisions. Therefore, we continue to believe that the Congress needs to be better informed of specific equipment condition deficiencies, the long-range strategies and required funding to address those deficiencies, and the risks associated with not adequately funding specific equipment modernization and recapitalization requirements. This report, for example, specifically identifies significant equipment condition deficiencies that were not adequately reflected in the department's budget documents, and a lack of specific program strategies and funding plans to address those deficiencies.

The department also noted in its written comments that our report identifies the CH-47D, CH-46E, KC-135, E/A-6B, Standard Missile-2, and the Tomahawk Missile as equipment items with problems and issues that warrant action within the next 1 to 3 years. The department stated that it will continue to reassess these equipment items as it goes through its resource allocation process. Lastly, the department provided technical comments related to our assessments of specific equipment items in appendix II. We reviewed and incorporated these technical comments, as appropriate.

The department's comments and our evaluation are on pages 23-25 of this report.

Background

The September 2001 Quadrennial Defense Review (QDR) outlined a strategy to sustain and transform the military force structure that has been in place since the mid-1990s.[10] In this review, the Department of Defense (DOD) committed to selectively recapitalize older equipment items to meet near-term challenges and to provide near-term readiness. DOD recognized that the older equipment items critical to DOD's ability to defeat current threats must be sustained as transformation occurs. DOD also recognizes that recapitalization of all elements of U.S. forces since the end of the Cold War has been delayed for too long.[11] DOD procured few replacement equipment items as the force aged throughout the 1990s, but it recognizes that the force structure will eventually become operationally and technologically obsolete without a significant increase in resources that are devoted to the recapitalization of weapons systems.

The annual Future Years Defense Plan (FYDP) contains DOD's plans for future programs and priorities. It presents DOD estimates of future funding needs based on specific programs. 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 and the policy choices made by the current administration. The 2003 FYDP extends

[10] Force structure includes 10 active and 8 reserve Army divisions, 12 Navy Carrier Battle Groups and 10 active and 1 reserve Carrier Air Wing, 3 active and 1 reserve Marine Expeditionary Force, 12 active and 7 reserve Air Force Fighter Wings, and 112 combat-coded heavy bombers.

[11] *Quadrennial Defense Review Report* (Washington, D.C.: Sept. 30, 2001).

from fiscal year 2003 to fiscal year 2007, and the 2004 FYDP extends from fiscal year 2004 to fiscal year 2009. Congress has expressed concerns that the military modernization budget and funding levels envisioned in the FYDP appear to be inadequate to replace aging equipment and incorporate cutting-edge technologies into the force at the pace required by the QDR and its underlying military strategy.

Overall Condition of Selected Equipment Items Varies Widely

As shown in table 1, of the 25 equipment items we reviewed, we assessed the current condition of 3 of these equipment items as red, 11 as yellow, and 10 as green. We were not able to obtain adequate data to assess the condition for the Marine Corps Maverick Missile because the Marine Corps does not track readiness trend data, such as mission capable or operational readiness rates, for munitions as they do for aircraft or other equipment.

Rotary wing lift helicopters, specifically the CH-46E and the CH-47D helicopters, had the lowest condition rating among the equipment items we reviewed, followed by fixed wing aircraft. Although we assessed the condition as green for several equipment items such as the Army's Abrams tank and the Heavy Expanded Mobility Tactical Truck, and the Marine Corps Light Armored Vehicle-Command and Control Variant, we identified various problems and issues that could potentially worsen the condition of some equipment items in the near future if not attended to. Specifically, for the Abrams tank, and similarly for the Heavy Expanded Mobility Tactical Truck, Army officials cited supply and maintenance challenges at the unit level such as repair parts shortages, inadequate test equipment, and lack of trained technicians that could impact the tank's condition in the near future. While the Marine Corps has a Light Armored Vehicle-Command and Control Variant upgrade program under way, Marine Corps officials caution that any delays in the upgrade program could affect future readiness. According to service officials and prior GAO reports, the services are currently able to alleviate the effects of these problems, in many cases, through increased maintenance hours and cannibalization of parts from other equipment.[12]

[12] U.S. General Accounting Office, *Military Aircraft: Services Need Strategies to Reduce Cannibalizations*, GAO-02-86 (Washington, D.C.: Nov. 21, 2001); *Military Aircraft: Cannibalizations Adversely Affect Personnel and Maintenance*, GAO-01-93T (Washington, D.C.: May 22, 2001).

The military services use a number of metrics to measure equipment condition. Examples include mission capable rates for aircraft, operational readiness rates for equipment other than aircraft,[13] average age, and utilization rates (e.g., flying hours). The equipment items we assessed as red did not meet mission capable or operational readiness goals for sustained periods, were older equipment items, and/or had high utilization rates. For example, 10 of 16 equipment items for which readiness data were available did not meet mission capable or operational readiness goals for extended periods from fiscal year 1998 through fiscal year 2002. The average age of 21 of the equipment items ranged from about 1 year to 43 years.[14]

Some equipment items for which we assessed the condition as yellow also failed to meet mission capable or operational readiness goals and were more than 10 years old. However, offsetting factors, such as how frequently the equipment items did not meet readiness goals or by what percentage they missed the goals, indicated less severe and urgent problems than items we assessed as red. Other equipment items may have had high mission capable rates, but because of overall age and related corrosion problems, we assessed these equipment items as yellow to highlight the fact that these items could potentially present problems if not attended to within the next 3-5 years.

The equipment items for which we assessed the condition as green generally met mission capable and operational readiness goals. While three of these equipment items—the Army Heavy Expanded Mobility Tactical Truck, the Air Force F-16, and the Marine Corps Light Armored Vehicle-Command and Control Variant—did not meet mission capable or operational readiness goals, we assessed the condition as green because the condition problems identified were less severe than the items we assessed as red or yellow. For example, an equipment item may have been slightly below the goal but only for non-deployed units, or the fleet-wide goals may have been met for the equipment item overall, although the specific model we reviewed did not meet the goals. In addition, although the rates for an equipment item may be slightly below its goal, it may be able to meet operational requirements. We also considered any upgrades

[13] Operational readiness refers to the capability of equipment items other than aircraft to perform the missions or functions for which it is organized or designed and may be used in general terms to express a level or degree of readiness.

[14] However, the services do not use a uniform methodology to calculate average age.

that were underway at the time of our review that would extend the service life of the equipment.

Maintenance problems were most often cited by the Army and Marine Corps officials we met with as the cause for equipment condition deficiencies for the equipment items we reviewed. Equipment operators and maintainers that we met with believed equipment degradation was the result of maintenance problems in one of two categories—parts or personnel. The parts problems include availability of parts or logistics and supply system problems. Availability problems occur when there are parts shortages, unreliable parts, or obsolete parts due to the advanced age of the equipment items. Logistics and supply system problems occur when it takes a long time to order parts or the unit requesting the parts has a low priority. In June, July, and August of 2003, we issued six reports highlighting deficiencies in DOD's and the services' management of critical spare parts.[15] We also issued a report on problems DOD and the services are having dealing with corrosion for military equipment and that they had not taken advantage of opportunities to mitigate the impact of corrosion on equipment.[16] Maintenance problems due to personnel include (1) lack of trained and experienced technicians and (2) increases in maintenance man-hours required to repair some of these aging equipment items. We reported in April 2003, for example, that DOD has not adequately positioned or trained its civilian workforce at its industrial activities to meet future requirements.[17] Consequently, the Department may continue to have difficulty maintaining adequate skills at its depots to meet maintenance requirements.

[15]U.S. General Accounting Office, *Defense Inventory: The Army Needs a Plan to Overcome Critical Spare Parts Shortages*, GAO-03-705 (Washington, D.C.: June 27, 2003); *Defense Inventory: Air Force Plans and Initiatives to Mitigate Spare Parts Shortages Need Better Implementation*, GAO-03-706 (Washington, D.C.: June 27, 2003); *Defense Inventory: The Department Needs a Focused Effort to Overcome Critical Spare Parts Shortages*, GAO-03-707 (Washington, D.C.: June 27, 2003); *Defense Inventory: Navy Logistics Strategy and Initiatives Need to Address Spare Parts Shortages*, GAO-03-708 (Washington, D.C.: June 27, 2003); and *Defense Inventory: Several Actions Are Needed to Further DLA's Efforts to Mitigate Shortages of Critical Parts*, GAO-03-709 (Washington, D.C.: August 31, 2003); and *Defense Inventory: Opportunities Exist to Improve Spare Parts Support Aboard Deployed Navy Ships*, GAO-03-887 (Washington, D.C.: Aug. 29, 2003).

[16] U.S. General Accounting Office, *Defense Inventory: Opportunities to Reduce Corrosion Costs and Increase Readiness*, GAO-03-753 (Washington, D.C.; July 7, 2003).

[17] U.S. General Accounting Office, *DOD Civilian Personnel: Improved Strategic Planning Needed to Help Ensure Viability of DOD's Civilian Industrial Workforce*, GAO-03-472 (Washington, D.C.; Apr. 30, 2003).

Services Have Mapped Out Long-Range Program Strategies for Sustaining and Modernizing Most Equipment Items but Some Gaps Exist

In most cases, the services have developed long-range program strategies for sustaining and modernizing the 25 equipment items that we reviewed. However, some gaps exist because the services either have not validated their plans for the sustainment, modernization, or replacement of the equipment items, or the services' program strategies for sustaining the equipment are hampered by problems or delays in the fielding of replacement equipment or in the vulnerability of the programs to budget cuts.

The two equipment items for which we assessed the program strategy as red are the KC-135 Stratotanker and the Tomahawk Cruise Missile because, although the services may have developed long-range program strategies for these equipment items, they have not validated or updated their plans for sustaining, modernizing, or replacing these items. In the case of the KC-135 Stratotanker, the Air Force has embarked on a controversial, expensive program to replace the tanker fleet, but as we have reported,[18] it has not demonstrated the urgency of acquiring replacement aircraft and it has not defined the requirements for the number of aircraft that will be needed. Similarly, for the Tomahawk missile, the Navy has not identified how many of these missiles it will need in the future, thereby significantly delaying the acquisition process.

[18] U.S. General Accounting Office, *Military Aircraft: Observations on the Air Force's Plan to Lease Aerial Refueling Aircraft*, GAO-03-1143T (Washington, D.C.: Sept. 3, 2003).

We assessed the program strategy for eight of the services' program strategies as yellow, some of them because they will be affected by delays in the fielding of equipment to replace the items in our review. According to service officials, as the delivery of new replacement equipment items is delayed, the services must continue using the older equipment items to meet mission requirements. Consequently, the services may incur increased costs due to maintenance that was not programmed for equipment retained in inventory beyond the estimated service life. For example, the planned replacement equipment for the Marine Corps CH-46E helicopter (i.e., the MV-22 Osprey) has been delayed by about 3 years and is not scheduled to be fielded until 2007. DOD has also reportedly cut the number of replacement aircraft it plans to purchase by about 8 to 10 over the next few years, thus the Marine Corps will have to retain more CH-46E helicopters in its inventory. Program management officials have requested additional funds to repair airframe cracks, replace seats, and move to light-weight armor to reduce aircraft weight, engine overhauls, and avionics upgrades to keep the aircraft safe and reliable until fielding of the replacement equipment. According to Marine Corps officials, the CH-46E program strategy has also been hampered by the 5-year rule,[19] which limits installation of new modifications other than safety modifications into the aircraft unless 5 years of service are left on the aircraft. Procurement of the replacement equipment for the Marine Corps' Assault Amphibian Vehicle has also been delayed (by 2 years), and it is not scheduled for full fielding until 2012. The program strategy for the Assault Amphibian Vehicle includes upgrades, but for only 680 of the 1,057 vehicles in the inventory.[20]

We also assessed the program strategy for some equipment items as yellow if they were vulnerable to budget cuts. For example, according to Navy officials, the Navy frigates' modernization program is susceptible to budget cuts because the frigates' future role is uncertain as the Littoral Combat ship is developed. In addition, the program strategy for the frigates is questionable because of the uncertainty about the role frigates will play. Specifically, Navy frigates are increasingly used for homeland defense

[19]Public Law 105-56, title VIII, section 8053; Oct. 8, 1997; 111 Stat. 1232.

[20] In its written comments on a draft of this report, department officials stated that they plan to upgrade an additional 327 vehicles for a total of 1,007 vehicles, assuming funding is provided. They have received funding through fiscal year 2003 supplemental funding, a fiscal year 2004 congressional plus-up, and fiscal year 2005 funding to upgrade 148 vehicles and plan to address the remaining 179 vehicles in a fiscal year 2006 Program Objective Memorandum.

missions, and their program strategy has not been updated to reflect that they will be used more often and in different ways. The Army's CH-47D helicopter is also vulnerable to budget cuts. The Army plans to upgrade 279 CH-47D helicopters to F models under its recapitalization program; the upgrade includes a purchase of CH-47F model helicopters planned in fiscal year 2004. The fiscal year 2004 budget for this purchase has already been reduced. Program managers had also planned to purchase 16 engines, but funding was transferred to requests for higher priority programs.

We assessed the program strategy for the remaining 15 equipment items as green because the services have developed long-range program strategies for sustaining, modernizing, or replacing these items consistent with their estimated remaining service life. For example, the Army has developed program strategies for all tracked and wheeled vehicles in our sample. Likewise, the Air Force has developed program strategies for most fixed wing aircraft in our sample throughout the FYDP. In the case of munitions, with the exception of the Navy Tomahawk Cruise Missile and Standard Missile-2, the services have developed program strategies for sustaining and modernizing the current missile inventory in our sample.

Requested Funding Does Not Reflect the Services' Long-Range Program Strategies

In many cases, the funding DOD has requested or is projecting for future years in the FYDP for the equipment items we reviewed does not reflect the military services' long-range program strategies for equipment sustainment, modernization, or recapitalization. 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. According to DOD officials, for future years' funding, the FYDP strikes a balance between future investment and program risk, taking into consideration the services' stated requirements as approved by DOD. As shown in table 1, we assessed the funding for 15 of the 25 equipment items as red or yellow because the department's requested funding did not adequately reflect its long-range program strategies for modernization, maintenance, and spare parts.[21] For example, as shown in table 2, we identified fiscal year 2003 unfunded requirements totaling $372.9 million for four major aircraft equipment items we reviewed.

[21]We did not independently verify the services' stated requirements.

Table 2: Unfunded Requirements for Selected Aircraft Equipment Items, Fiscal Year 2003

Dollars in millions	
Aircraft equipment item	**Unfunded requirements**
CH-47D Transport Helicopter	$316.0
F-16 Fighter Aircraft	13.5
C-5 Transport Aircraft	39.4
CH-46E Transport Helicopter	4.0
Total	**$372.9**

Source: GAO analysis.

The most significant funding shortfalls occurred when parts, equipment upgrades, and maintenance were not fully funded or when replacement equipment items were not fielded as scheduled. The equipment items for which we assessed the funding as yellow had funding shortfalls of a lesser extent than the red items. Although we assessed the funding as green for the remaining nine equipment items, program managers raised concerns about the availability of operation and maintenance funds in future years, and stated that insufficient operation and maintenance funds could potentially result in more severe condition problems and increased future maintenance costs.

According to service officials, funding shortfalls occurred when parts, equipment upgrades, or maintenance were not fully funded or funds were reduced to support higher priority service needs. As we have previously reported, DOD increases or decreases funds appropriated by Congress as funding priorities change.[22] Other shortfalls occur when units subsequently identify maintenance requirements that were not programmed into the original budget requests. In addition, when replacement equipment items are not fielded as scheduled, the services must continue to maintain these aging equipment items for longer than anticipated. Equipment items considered legacy systems[23] such as the Marine Corps CH-46E helicopter

[22]U.S. General Accounting Office, *Defense Budget: DOD Should Further Improve Visibility and Accountability of O&M Fund Movements*, GAO/NSIAD-00-18 (Washington, D.C. Feb. 9, 2002).

[23] Legacy systems are equipment items whose critical functionality will be subsumed by a new system and is scheduled for termination. The Stryker, Patriot, and Guided Multiple Launch Rocket System are not legacy equipment items.

may not receive funding on the basis of anticipated fielding of replacement equipment in the near future. The gaps between funding for legacy systems (which are heavily used and critical to the services' mission) and funding for future replacement equipment result when fielding of the new equipment has been delayed and budgets have been reduced for maintenance of legacy systems. Funding for these legacy systems may also be a target for funding reductions to support higher service priority items.

According to the program managers for some of the equipment items we reviewed (including the Army Abrams tank, Heavy Expanded Mobility Tactical Truck, and Navy EA-6B Prowler), as the services retain aging equipment in their inventories longer than expected, maintenance requirements increase, thus increasing operation and maintenance costs. Program managers raised concerns about the availability of sufficient operation and maintenance funding to sustain these aging equipment items in the future. Also, program managers stated that present sustainment funds (i.e., operation and maintenance funds) may only cover a small percentage of the equipment's requirements, and they frequently rely on procurement funds to subsidize equipment improvements common to multiple equipment items.[24] However, once production of the equipment item has been completed and procurement funds are no longer available for use, program managers must compete with the rest of the service for limited operation and maintenance funds. Program managers expressed concerns that operation and maintenance funds are not currently available to fund equipment improvements and noted operation and maintenance funds may not be available in the future.

Equipment Is Generally Capable of Fulfilling Wartime Missions despite Some Limitations

Based on our analysis of equipment condition, the performance of the equipment items in recent military conflicts, and discussions with service officials, program managers, and equipment operators and maintainers, we found that most of the equipment items we reviewed are capable of fulfilling their wartime missions despite some limitations. In general, the services will always ensure equipment is ready to go to war, often through surges in maintenance and overcoming obstacles such as obsolete parts, parts availability, and cannibalization of other pieces of equipment. Some

[24] Operating and support costs or total life-cycle costs are the total costs of acquiring and owning a weapon or materiel system over its full life, including development, procurement, operation, support, and disposal. About 60 percent of O&S funding is appropriated to the operation and maintenance accounts that pay for spare and repair parts.

of these equipment items (such as the Marine Corps CH-46E helicopter and all Air Force aircraft except the B-2) were used in Operation Desert Storm and have been used in other diverse operations such as those in Kosovo and Afghanistan. With the exception of the Army Stryker and GMLRS, all of the equipment items we reviewed were used recently in Operation Iraqi Freedom.

The services, in general, ensure that equipment is ready for deployment by surging maintenance operations when necessary. Only one equipment item, the Marine Corps CH-46E helicopter, could not accomplish its intended wartime mission due to lift limitations. However, Marine Corps officials stated that they were generally satisfied that the CH-46E met its mission in Operation Iraqi Freedom despite these limitations. Of the remaining equipment items we reviewed, including all Air Force fixed-wing aircraft, all tracked and wheeled vehicles, and most munitions, service officials believe that most of these items are capable of fulfilling their wartime missions.

According to service officials and program managers, while final Operation Iraqi Freedom after action reports were not available at the time of our review, initial reports and preliminary observations have generally been favorable for the equipment items we reviewed. However, these officials identified a number of specific concerns for some of these equipment items that limit their wartime capabilities to varying degrees. For example, only 26 out of 213 Marine Corps Assault Amphibian Vehicles at Camp Lejeune had been provided enhanced protective armor kits prior to Operation Iraqi Freedom. According to Marine Corps officials at Camp Lejeune, lack of the enhanced protective armor left the vehicles vulnerable to the large caliber ammunition used by the Iraqi forces. According to Navy officials, warfighting capabilities of the Navy EA-6B Prowler aircraft will be degraded if their capabilities are not upgraded and the outer wing panels are not replaced. Fleet commanders expressed concerns about potentially deploying some ships we reviewed with only one of three weapons systems capable of being used. However, program managers stated that plans were in place to reduce the vulnerability of these ships by fielding two compensating weapons systems.

Conclusions

Although the military services are generally able to maintain military equipment to meet wartime requirements, the ability to do so over the next several years is questionable especially for legacy equipment items. Because program strategies have not been validated or updated and

funding requests do not reflect the services' long-range program strategies, maintaining this current equipment while transforming to a new force structure as well as funding current military operations in Iraq and elsewhere will be a major challenge for the department and the services. We do not believe, however, that the funding gaps we identified are necessarily an indication that the department needs additional funding. Rather, we believe that the funding gaps are an indication that funding priorities need to be more clearly linked to capability needs and to long-range program strategies.

The military services will always need to meet mission requirements and to keep their equipment ready to fulfill their wartime missions. However, this state of constant readiness comes at a cost. The equipment items we reviewed appear to have generally fulfilled wartime missions, but often through increased maintenance for deployed equipment and other extraordinary efforts to overcome obstacles such as obsolete parts, parts availability, and cannibalization of other pieces of equipment. The reported metrics may not accurately reflect the time needed to sustain and maintain equipment to fulfill wartime missions. Substantial equipment upgrades or overhauls may be required to sustain older equipment items until replacement equipment items arrive.

Recommendations for Executive Action

While our review was limited to 25 equipment items and represents a snapshot at a particular point in time, the department should reassess its current processes for reviewing the condition, program strategy, and funding for key legacy equipment items. Specifically we recommend that the Secretary of Defense, in conjunction with the Secretaries of the Army, Air Force, and the Navy, reassess the program strategies for equipment modernization and recapitalization, and reconcile those strategies with the services' funding requests to ensure that key legacy equipment, especially those items needed to meet the strategy outlined in the September 2001 Quadrennial Defense Review, are sustained until replacement equipment items can be fielded. In reconciling these program strategies to funding requests, the Secretary of Defense should highlight for the Congress, in conjunction with the department's fiscal year 2005 budget submissions, the risks involved in sustaining key equipment items if adequate funding support is not requested and the steps the department is taking to address those risks. As part of this process the department should identify the key equipment items that, because of impaired conditions and their importance to meeting the department's military strategy, should be given the highest priority for sustainment, recapitalization, modernization, or replacement.

Matter for Congressional Consideration

If the Congress wants a better understanding of the condition of major equipment items, the department's strategy to maintain or recapitalize these equipment items, and the associated funding requirements for certain key military equipment needed to meet the strategy outlined in the QDR, the Congress may wish to consider having the Secretary of Defense provide an annual report, in conjunction with its annual budget submissions, on (1) the extent to which key legacy equipment items, particularly those that are in a degraded condition, are being funded and sustained until replacement equipment items can be fielded; (2) the risks involved in sustaining key equipment items if adequate funding support is not requested; and (3) the steps the department is taking to address those risks.

Agency Comments and Our Evaluation

In written comments on a draft of this report, the Department of Defense partially concurred with our recommendation that it should reassess the program strategies for equipment modernization and recapitalization, and reconcile those strategies to the services' funding requests. However, the department did not concur with our other two recommendations that it should (1) highlight for the Congress the risks involved in sustaining key equipment items if adequate funding support is not requested and the steps the department is taking to address those risks, and (2) identify the equipment items that should be given the highest priority for sustainment, recapitalization, modernization, or replacement. 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 program strategies for equipment modernization and recapitalization, and reconcile those strategies to the services' funding requests, the department agreed that, while the overall strategy outlined in the September 2001 Quadrennial Defense Review may be unchanged, events over time may dictate changes in individual program strategies, that requires an order to meet the most current threat. The department stated, however, that through its past Planning, Programming, and Budgeting System and the more current Planning, Programming, Budgeting, and Execution processes, the department had and continues to have an annual procedure to reassess program strategies to ensure equipment maintenance, modernization, and recapitalization funding supports the most recent Defense strategy. While we acknowledge that these budget processes may provide a corporate, department-level review of what is needed to accomplish the national defense mission, the department's budget and the information it provides to the Congress do not clearly

identify the funding priorities for individual equipment items. For example, although the funding to sustain the department's major equipment items is included in its Operation and Maintenance budget accounts, these budget accounts do not specifically identify funding for individual equipment items. 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 legacy equipment items, developing program strategies to address critical equipment condition deficiencies, and prioritizing the required funding.

The department did not concur with our second recommendation that, in reconciling the program strategies to funding requests, it should highlight for the Congress, in conjunction with its fiscal year 2005 budget submissions, the risks involved in sustaining key equipment items if adequate funding support is not requested and the steps the department is taking to address those risks. Specifically, the department stated that its budget processes and the annual Defense budget provide the Congress a balanced program with all requirements "adequately" funded and that the unfunded requirements identified by the program managers or the services may not be validated at the department level. While we agree that the department's budget may identify its highest funding priorities at the department wide level, it does not provide the Congress with an assessment of equipment condition deficiencies, unfunded requirements identified by the services, and the potential risks associated with not fully funding the services' program strategies. In this report, we identify a number of examples of equipment condition deficiencies and inconsistencies between the program strategies and the funding requests to address those deficiencies that were not fully addressed in the department's budget documents. We believe that the Congress, in its oversight of the department's major equipment programs, needs to be better informed of specific equipment condition deficiencies, the long-range strategies and required funding to address those deficiencies, and the risks associated with not adequately funding specific equipment modernization and recapitalization requirements.

The department also did not concur with our recommendation that it should identify for the Congress the key equipment items that, because of impaired condition and their importance to meeting the department's military strategies, should be given the highest priority for sustainment, recapitalization, modernization, or replacement. In its comments, the department stated that, in developing the annual Defense budget, it has already allocated resources according to its highest priorities. The

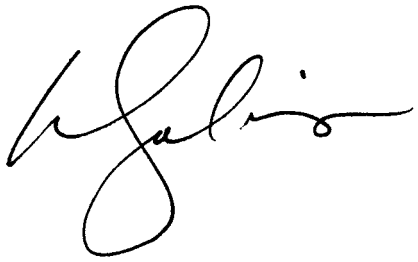
department further stated that key items that are vital to accomplishing the department's mission are allocated funding in order to meet the requirements of the most current Defense strategy, and that there is no need to restate these priorities with a list. Similar to our rebuttal to the department's response to our second recommendation as discussed above, we do not believe that the department's annual budget provides the Congress with sufficient information on the most severe equipment condition deficiencies and the funding priorities for addressing those deficiencies. We believe that a separate analysis, in conjunction with the department's budget submissions, that highlights the most critical equipment condition deficiencies, the planned program strategies for addressing those deficiencies, and the related funding priorities is needed to provide the Congress with the information it needs to make informed budget decisions.

The department also noted in its written comments that our report identifies the CH-47D, CH-46E, KC-135, EA-6B, Standard Missile-2, and the Tomahawk missile as equipment items with problems and issues that warrant action within the next 1 to 3 years. The department stated that it would continue to reassess these equipment items as it goes through its resource allocation process.

Lastly, the department provided technical comments concerning our assessments of specific equipment items in appendix II, including the KC-135 Stratotanker, Assault Amphibian Vehicle, MV-22, Tomahawk Cruise Missile, and the CH-46E Sea Knight Helicopter. We reviewed and incorporated these technical comments, as appropriate. The revisions that we made based on these technical comments did not change our assessments for the individual equipment items. In some cases, the data and information the department provided in its technical comments resulted from program and funding decisions that were made subsequent to our review.

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.

Please contact me on (202) 512-8365 if you or your staffs have any questions concerning this report. Major contributors to this report are included in appendix IV.



William M. Solis, Director
Defense Capabilities and Management

Scope and Methodology

To determine the level of attention required by the Department of Defense, the military services, and/or the Congress for each of the 25 equipment items we reviewed, we performed an independent evaluation of the (1) equipments' current condition; (2) services' program strategies for the sustainment, modernization, or replacement of the equipment items; (3) current and projected funding levels for the equipment items in relation to the services' program strategies; and (4) equipments' wartime capabilities. Based on our evaluation of the condition, program strategy, and funding for each of the 25 equipment items, we used a traffic light approach—red, yellow, or green—to indicate the severity and urgency of problems or issues. We established the following criteria to assess the severity and urgency of the problems.

- Red  indicates a problem or issue that is severe enough to warrant action by DOD, the military services, and/or the Congress within the next 1-3 years. We selected this time frame of 1-3 years because it represents the time frame for which DOD is currently preparing annual budgets.

- Yellow indicates a problem or issue that is severe enough to warrant action by DOD, the military services, and/or the Congress within the next 3-5 years. We selected this time frame of 3-5 years because it represents the near-term segment of DOD's Future Years Defense Plan.

- 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 not of a severe enough nature that we believe warrant action by DOD, the military services, and/or the Congress within the next 5 years. We selected this time frame of 5 years because it represents the longer-term segment of DOD's Future Years Defense Plan.

We also reviewed the wartime capability of the selected equipment items, focusing on the extent to which each equipment item is capable of fulfilling its wartime mission. Because of ongoing operations in Iraq and our limited access to the deployed units and related equipment performance data, we were unable to obtain sufficient data to definitively assess the wartime capability for each of the 25 equipment items we reviewed, as we did for each of the other three assessment areas.

To select the 25 equipment items we reviewed, we worked with the military services and your offices to judgmentally select approximately two weapons equipment items, two support equipment items, and two munitions items from the equipment inventories of each of the four military services—Army, Air Force, Navy, and Marine Corps. We relied extensively on input from the military services and prior GAO work to select equipment items that have been in use for a number of years and are critical to supporting the services' mission. We based our final selections on the equipment items that the military services believed were most critical to their missions. The 25 equipment items we selected for review include 7 Army equipment items, 6 Air Force equipment items, 7 Navy equipment items, and 5 Marine Corps equipment items. Our assessments apply only to the 25 equipment items we reviewed, and the results of our assessments cannot be projected to the entire inventory of DOD equipment.

To assess equipment condition, we obtained and analyzed data on equipment age, expected service life, and the services' equipment condition and performance indicators such as mission capable rates, operational readiness rates, utilization rates, failure rates, cannibalization rates, and depot maintenance data for each of the equipment items we reviewed. The specific data that we obtained and analyzed for each equipment item varied depending on the type of equipment and the extent to which the data were available. The scope of our data collection for each of the equipment items included both the active and reserve forces. We also met with the services' program managers and other cognizant officials from each of the four military services for each of the 25 equipment items. In addition, we visited selected units and maintenance facilities to observe the equipment during operation or during maintenance and to discuss equipment condition and wartime capability issues with equipment operators and maintainers. Our observations and assessments were limited to equipment in the active duty inventory.

To assess the program strategy for these equipment items, we reviewed the services' plans for future sustainment, modernization, recapitalization, or replacement of the equipment items in order to meet the services' mission and force structure requirements. We met with the services' program managers and other military service officials to discuss and assess the extent to which the services have a strategy or roadmap for each of the 25 equipment items, and whether the program strategy is adequately reflected in DOD's current budget or the Future Years Defense Plan.

To assess equipment funding, we obtained and analyzed data on historical, current, and future years' budget requests for each of the 25 equipment items we reviewed. We also reviewed the services' budget requests, appropriations, and obligations for fiscal year 1998 through fiscal year 2003 to determine how the funds that had been requested and appropriated for each of the equipment items were used. In addition, we reviewed the Future Years Defense Program for fiscal year 2003 to fiscal year 2007 and for fiscal year 2004 to fiscal year 2008 to determine if the projected funding levels were consistent with the services' program strategies for sustainment, modernization, recapitalization, or replacement of the selected equipment items. We also met with the services' program managers for each of the 25 equipment items to identify budget shortfalls and unfunded requirements. We did not independently validate the services' requirements. We were unable, however, to obtain specific information from the Office of the Secretary of Defense or the Joint Staff on the long-term program strategies and funding priorities for these equipment items because officials in these offices considered this information to be internal DOD data and would not make it available to us.

To review the wartime capability of each equipment item, we discussed with military service officials, program managers, and equipment operators and maintainers the capabilities of the equipment items to fulfill their wartime missions and the equipments' performance in recent military operations. Because of ongoing operations in Iraq and our limited access to the deployed units and related equipment performance data, we were unable to collect sufficient data to definitively assess wartime capability or to assign a color-coded assessment as we did with the other three assessment areas. We also reviewed related Defense reports, such as after action reports and lessons learned reports, from recent military operations to identify issues or concerns regarding the equipments' wartime capabilities.

We performed our work at relevant military major commands, selected units and maintenance facilities, and one selected defense combatant command. Our access to specific combatant commands and military units was somewhat limited due to their involvement in Operation Iraqi Freedom. The specific military activities that we visited or obtained information from include the following:

- U.S. Army, Headquarters, Washington, D.C.;
- U.S. Army, Office of the Assistant Secretary of the Army for Acquisitions, Logistics, and Technology, Washington, D.C.;

- U.S. Army Forces Command Headquarters, Atlanta, Ga.;
- U.S. Army, 1st Calvary Division, 118th Corps, Ft. Hood, Tx.;
- U.S. Army, Aviation and Missile Command, Redstone Arsenal, Precision Fire and Missile Project Office, Huntsville, Al.;
- U.S. Army, Tank and Armament Automotive Command, Warren, Mi.;
- U.S. Army, Cost and Economic Analysis Center, Pentagon, Washington, D.C.;
- U.S. Army, Pacific, Ft. Shafter, Hawaii; and
- U.S. Army, 25th Infantry Division (Light), Schofield Barracks, Hawaii;
- U.S. Air Force, Headquarters, Plans and Programs Division, Washington, D.C.;
- U.S. Air Force, Combat Forces Division, and Global Mobility Division, Washington, D.C.;
- U.S. Air Force, Munitions Missile and Space Plans and Policy Division, Washington, D.C.;
- U.S. Air Force, Air Logistics Center, Robins Air Force Base, Ga.;
- U.S. Air Force, Air Combat Command, Directorate of Requirements and Plans, Aircraft Division, and the Installation and Logistics Division, Langley Air Force Base, Va.;
- U.S. Air Force, Pacific, Hickam Air Force Base, Hawaii;
- U.S. Navy, Naval Surface Forces, Atlantic Fleet, Norfolk Naval Base, Va.;
- U.S. Navy, Naval Air Force, Atlantic Fleet, Norfolk Naval Base, Va.;
- U.S. Navy, Naval Weapons Station Yorktown, Va.;
- U.S. Navy, Naval Surface Forces, Pacific Fleet, Pearl Harbor, Hawaii;
- U.S. Navy, Naval Surface Forces, Pacific Fleet, Naval Amphibious Base, Coronado, Calif.;
- U.S. Navy, Naval Air Forces, Naval Air Station North Island, Coronado, Calif.;
- U.S. Navy, Naval Weapons Station Seal Beach, Calif.;
- U.S. Navy, Electronic Attack Wing, U.S. Pacific Fleet, Naval Air Station Whidbey Island, Wash.;
- U.S. Navy, Naval Sea Systems Command, Washington Navy Yard, Washington, D.C.;
- U.S. Navy, Naval Air Systems Command, Naval Air Station Patuxent River, Md.;
- U.S. Navy, Naval Air Depot, Naval Air Station North Island, Calif.; and
- U.S. Navy, Avondale Shipyard, Avondale, La.;
- U.S. Marine Corps, Systems Command, Quantico, Va.;
- U.S. Marine Corps, Aviation Weapons Branch, Pentagon, Washington, D.C.;
- U.S. Marine Corps, Tank Automotive and Armaments Command, Warren, Mich.;

- U.S. Marine Corps, I Marine Expeditionary Force, Camp Pendleton, Calif.;
- U.S. Marine Corps, II Marine Expeditionary Force, Camp Lejeune, N.C.;
- U.S. Marine Corps, Naval Research Lab, Washington, D.C.;
- U.S. Marine Corps, AAAV Technology Center, Woodbridge, Va.; and
- U.S. Marine Corps, Marine Forces Pacific, Camp Smith, Hawaii.

We also obtained and reviewed relevant documents and reports from DOD and the Congressional Budget Office, and relied on related prior GAO reports. We performed our review from September 2002 through October 2003 in accordance with generally accepted government auditing standards.

Assessments of Selected Equipment Items

For the 25 equipment items, each assessment provides a snapshot in time of 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 contains a highlighted area indicating the level of DOD, military service, and/or congressional attention each equipment item needs, in our opinion, based on our observations of each equipment item, discussions with service officials, and reviews of service-provided metrics.

Army

Abrams 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, M1A1, and M1A2. The M1 has a 105mm main gun; the M1A1 and M1A2 have a 120 mm gun, combined with a powerful turbine engine and special armor. There are 5,848 tanks in the inventory, and the estimated average age is 14 years. The M1 variant will be phased out by 2015. The M1 and M1A2 variant are being upgraded to the M1A2 Systems Enhancement Program (SEP) by July 2004.

Figure 1: Abrams Tank

Source: Defense Visual Information Center.

Condition

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. Although the Abrams met its mission capable goal, supply and maintenance operations at the unit-level are a challenge because of repair parts shortages, unreliable components, inadequate test equipment, and lack of trained technicians. There are concerns that the

future condition of the Abrams could deteriorate in the next 5 years due to insufficient sustainment funds. The lack of funds could result in an increase of aging tanks and maintenance requirements.

Program Strategy

We assessed the program strategy for the Abrams as green because the Army has developed a long-term strategy for upgrading and phasing out certain variants of aging tanks in its inventory. The Army's Recapitalization Program selectively implements new technology upgrades to reduce operations and support cost. Additionally, the Army is phasing out the M1A2 from its inventory by 2009, and procuring 588 M1A2 SEPS. The SEP enhances the digital command and control capabilities of the tank. The Army also developed a program for improving the Abrams M1A2 electronics called the Continuous Electronic Evolution Program, which is part of the SEP. The first phase of this program has been approved and funded. According to an Army official, the next phase is expected to start in approximately 5 years.

Funding

We assessed the funding for the Abrams as yellow because current and projected funding is not consistent with the Army's stated requirements to sustain and modernize the Abrams tank inventory. The Army reduced the recapitalization budget by more than 50 percent for the M1A2 SEP, thereby decreasing the number of upgrades from 1,174 to 588. Unfunded requirements for the Abrams tank include the vehicle integrated defense systems, safety and environmental fixes, and an improved driver's viewer system. Without adequate funding, obsolescence may become a major issue once tank production ends and procurement funds are no longer available to subsidize tank requirements. Procurement funding for the M1A2 SEP will be completed by 2003 and deliveries completed by 2004. According to an Army official, the Abrams procurement funding provides approximately 75 percent to 80 percent of the tank requirements due to commonality among the systems.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability for the Abrams, a detailed pre-war assessment prepared by the program manager's office indicated that the tank is not ready or able to

sustain a long-term war. During Operation Iraqi Freedom, the Abrams tank was able to successfully maneuver, provide firepower, and protect the crew. Losses were attributed to mechanical breakdown and cannibalization. The detailed assessment by the program manager's office, however, indicated that limited funding, war reserve spare part shortages, and supply availability could impact the tank's ability to sustain a long-term war.

AH-64A/D Apache Helicopter

The Apache is a multi-mission aircraft designed to perform rear, close, deep operations and precision strikes, armed reconnaissance and security during day, night, and adverse weather conditions. There are approximately 728 Apache helicopters in the Army's inventory—418 AH-64A models and 310 AH-64D models. The fleet average age is about 12 years.

Figure 2: AH-64A/D Apache Helicopter

Source: Defense Visual Information Center.

Condition

We assessed the condition of the Apache as yellow because the Apache AH-64D model failed to meet the mission capable goal of 75 percent approximately 50 percent of the time, from fiscal year 1999 through fiscal year 2002; however, according to officials, the Apache mission capable rates have consistently exceeded the 75 percent goal in calendar year 2003. Aviation safety restrictions were cited as the reason why the Apache failed to meet mission capable goals. A safety restriction pertains to any defect or hazardous condition that can cause personal injury, death, or damage to the aircraft, components, or repair parts for which a medium to high safety risk has been determined. These restrictions included problems with the (1) aircraft Teflon bushings, (2) transmission, (3) main rotor blade attaching pins, (4) generator power cables, and (5) the removal, maintenance and inspection of the Auxiliary Power Unit Takeoff Clutch.

The Army's Recapitalization Program includes modifications that are intended to address these safety restrictions.

Program Strategy

We assessed the program strategy for the Apache as green because the Army has developed a long-term program strategy to sustain and upgrade the aging Apache fleet. The Army's Recapitalization Program addresses costs, reliability, and safety problems, fleet groundings, aging aircraft, and obsolescence. The Army plans to remanufacture 501 AH-64A helicopters to the AH-64D configuration. The goal is to reduce the fleet average age to 10 years by 2010, increase the unscheduled mean time between removal by 20 percent for selected components, and generate a 20 percent return on investment for the top 10 cost drivers. The Army is on-schedule for fielding the Apache AH-64D.

Funding

We assessed the funding for the Apache as green because current and projected funding is consistent with the Army's stated requirements for sustaining and upgrading the Apache fleet. The Apache program is fully funded through fiscal year 2005 at a total cost of $6.7 billion. The funding supports remanufacturing and upgrading 501 Apache AH-64A to the newer Longbow Apache AH-64D aircraft, as well as funding other reliability and safety issues. The Army has expended $3.6 billion to convert 284 A models to D models from fiscal year 1996 through fiscal year 2001. The other $3.1 billion supports upgrading the remaining 217 A models to address reliability and safety issues, procuring Detection Systems, and procuring Internal Auxiliary Fuel System/Ammo Flat Pack for the Apache fleet. The Army has not made a decision to fund modifications needed in fiscal year 2005 through fiscal year 2012, which is estimated to cost approximately $3.4 billion

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability of the Apache, Army officials did not identify any specific concerns. These officials indicated that the Apache successfully fulfilled its wartime missions in Afghanistan and Operation Iraqi Freedom. In Operation Iraqi Freedom, the AH-64D conducted combat operations for both close combat and standoff engagements. Every mission assigned was

flown and accomplished with the Apache AH-64D. The Longbow performance has been enhanced by targeting and weapon systems upgrades that have improved the Longbow performance over the AH-64A.

Stryker

The Stryker is a highly deployable-wheeled armored vehicle that employs 10 variations—the Infantry Carrier Vehicle (ICV), Mortar Carrier (MC), Reconnaissance Vehicle (RV), Commander Vehicle (CV), Medical Evacuation Vehicle (MEV), Engineer Squad Vehicle (ESV), Anti-Tank Guided Missile Vehicle (ATGM), and Fire Support Vehicle (FSV), the Mobile Gun System (MGS), and the Nuclear Biological and Chemical Reconnaissance Vehicle (NBCRV). There are 600 Stryker vehicles in the Army's inventory, and the average age is less than 2 years. The Army plans to procure a total of 2,121 Stryker vehicles through fiscal year 2008.

Figure 3: Stryker

Source: Defense Visual Information Center.

Condition

We assessed the condition of the Stryker as green because it has successfully achieved the fully mission capable goal of 95 percent, based on a 3-month average from April 2003 through July 2003. The Congress mandated that the Army compare the operational effectiveness and cost of an infantry carrier variant of the Stryker and a medium Army armored vehicle. The Army compared the cost and operational effectiveness of the Stryker infantry carrier against a medium armored vehicle. The Army selected the M113A3, and the comparison shows the Stryker infantry carrier vehicle is more survivable and provides better overall performance and mobility when employed in combat operations than the M113A3.

Program Strategy

We assessed the program strategy for the Stryker as green because the Army developed a long-term program strategy for procuring a total of 2,121 vehicles through fiscal year 2008, which will satisfy the total requirement. Of the 600 currently in the inventory, 449 are at 2 brigades—a 3rd brigade of the 2nd Infantry Division and the 1st brigade of the 25th Infantry Division, both of which are located at Fort Lewis, Washington. The other 151 are at fielding sites, training centers, and the Army Test and Evaluation Center. The remaining 1,521 will be procured through fiscal year 2007 with expected deliveries through fiscal year 2008. The next brigade scheduled to receive the Stryker is the 172nd Infantry Brigade at Forts Richardson and Wainwright, Alaska. The remaining Stryker Brigades Combat Teams to be equipped with the Stryker are the 2nd Cavalry Regiment, Fort Polk, Louisiana; 2nd Brigade, 25th Infantry Division, Schofield Barracks, Hawaii; and 56th Brigade of the 28th Infantry Division, Pennsylvania Army National Guard.

Funding

We assessed the funding for the Stryker as green because current and projected funding is consistent with the Army's stated requirements to sustain the Stryker program. The program is fully funded to field the six Stryker brigade combat teams. Approximately $4.1 billion has been allocated for all six combat teams through fiscal year 2009. The Secretary of Defense has authorized the procurement of the first three brigades, but the fourth brigade cannot be procured until the Secretary of Defense solidify to Congress that the results of the Operational Evaluation mandated by Congress indicated that the design for the interim brigade combat team is operationally effective and operationally suitable. The evaluation was completed in May 2003 and results are being finalized.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability of the Stryker, the Army did not identify any specific concerns regarding the system being able to meet its wartime mission. The Stryker has not yet been used in any conflict situation. In May 2003, GAO reported that the Army Test and Evaluation Command concluded that the Stryker provided more advantages than the M113A3 in force protection, support for dismounted assault, and close fight and mobility, and was more survivable against ballistic and non-ballistic threats.

CH-47D/F Chinook Helicopter

The CH-47 helicopter is a twin-engine, tandem rotor helicopter designed for transportation of cargo, troops, and weapons. The Army inventory consists of 426 CH-47D models and 2 CH-47F models. The CH-47F Improved Cargo Helicopter is a remanufactured version of the CH-47D and includes a new digital cockpit and a modified airframe to reduce vibration. The overall average age of the CH-47 is 14 years old. The Army plans to convert 76 D model aircraft to the F model between fiscal years 2005 and fiscal year 2009.

Figure 4: CH-47D/F Chinook Helicopter

Source: Defense Visual Information Center.

Condition

We assessed the condition of the Chinook as red because it consistently failed to meet the Army's mission capable goal of 75 percent from fiscal year 1998 to fiscal year 2002. Actual mission capable rates ranged from 61 percent to 69 percent. Army officials attributed the failure to meet the 75 percent mission capable goal to aging equipment, supply shortages, and inexperienced technicians. Maintaining aircraft has become increasingly difficult with the CH-47D failing to meet the non-mission capable maintenance goal of 15 percent, increasing from 27 percent in fiscal year 1998 to 31 percent in fiscal year 2002.

Program Strategy

We assessed the program strategy for the Chinook as yellow because the Army has developed a long-term strategy for upgrading and replacing the Chinook, but the strategy is not consistent with the Army's funding priorities. There has been a delay in the plan to upgrade 279 D models to F models between fiscal year 2003 and fiscal year 2017 under the Army's Recapitalization Program, reducing the number of CH-47F helicopters planned in the fiscal year 2004 budget by five due to unexpected funding constraints. These budgetary constraints also delayed the Army's plans to purchase 16 engines because funding was transferred to support other non-recurring requirements. Readiness may be adversely affected if these engines are not procured because unit requisitions for these engines will not be filled and aircraft will not be fully mission capable.

Funding

We assessed the funding for the Chinook as yellow because current and projected funding is not consistent with the Army's requirements for sustaining and upgrading the Chinook helicopter. At present, the Army has identified unfunded requirements totaling $316 million, with $77 million needed to procure the five CH-47Fs and the 16 engines for which the funds had been previously diverted. The remaining $239 million would support other improvements including common avionics system, rotor heads, crashworthy crew seats, and engine modifications. The Army will resolve some or all of these requirements with projected funding of $3 billion to support the CH-47 program through fiscal year 2017.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability for the Chinook, Army officials indicated that it successfully fulfilled its wartime mission for Operation Iraqi Freedom despite current condition problems. These officials stated that the deployed units were able to overcome these condition problems because the deployed aircraft were provided a higher priority than non-deployed aircraft for spare parts. As a result, the estimated mission capable rates for deployed aircraft increased to about 86 percent during the operation.

Heavy Expanded Mobility Tactical Truck (HEMTT)

The HEMTT provides transport capabilities for re-supply of combat vehicles and weapon systems. The HEMTT's five basic configurations include the cargo truck, the load handling system, wrecker, tanker, and tractor. The HEMTT entered into the Army's inventory in 1982. The current inventory totals about 12,500 and the average age is 13 years.

Figure 5: Heavy Expanded Mobility Tactical Truck

Source: Defense Visual Information Center.

Condition

We assessed the condition of the HEMTT as green because mission capable rates have been close to the Army's 90 percent goal, averaging 89 percent between fiscal year 1998 and fiscal year 2002. Moreover, the overall supply availability rates have exceeded the 85 percent goal from May 2002 to October 2002, averaging between 96 percent and 99 percent, respectively. In some instances, however, meeting the operational goals has been continually challenging because of aging equipment, heavy equipment usage, and the lack of trained mechanics. The lack of trained mechanics may also impact the Army's future ability to meet the specified mission

capable goals. In addition, a detailed pre-war assessment by the program manager's office indicated that concerns regarding shortages of spare parts would significantly degrade the HEMTT readiness rates.

Program Strategy

We assessed the program strategy for the HEMTT as green because the Army has developed a long-term program strategy for sustaining and modernizing the HEMTT inventory. The Army's plans include procuring 1,485 new tankers and wreckers through fiscal year 2007, which will satisfy the Army's stated requirement. The Army also plans to rebuild some of the existing vehicles through the HEMTT Extended Service Program. This program, scheduled to be complete in fiscal year 2012, will insert technology advancements and will provide continuous improvements to the vehicle. Although there has been a reduction in the Army's budget for the Extended Service Program, the plan is to continue rebuilding trucks in smaller quantities and at a slower pace. The Army's Forces Command has implemented a Vehicle Readiness Enhancement Program that serves as an interim maintenance program for the HEMTT awaiting induction into the Extended Service Program.

Funding

We assessed the funding for the HEMTT as yellow because current and projected funding is not consistent with the Army's stated requirements to sustain and modernize the HEMTT inventory. Specifically, the Army has unfunded requirements of $10.5 million as of fiscal year 2003, of which $3.9 million is for spare parts and $6.6 million is for war reserves. In addition, the Army reduced the Recapitalization Program by $329 million. The Army had planned to upgrade 2,783 vehicles currently in the inventory; however, 1,365 will not be upgraded as a result of the reductions in the Recapitalization Program. Consequently, according to Army officials, maintenance and operating and support costs will likely increase.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability for the HEMTT, Army officials indicated that it has successfully fulfilled its wartime requirements during recent combat operations. Based on the program manager's preliminary observations, the HEMTT performed successfully during Operation Iraqi Freedom. A detailed pre-war

assessment by the program manager's office indicated that the HEMTT was ready for war, but could experience sustainment problems due to a shortage of war reserve spare parts. The program manager's office is currently assessing the condition of the active and war reserve equipment used in Operation Iraqi Freedom.

Patriot Missile (PAC-3)

The PAC-3 missile is considered a major upgrade to the Patriot system. Sixteen PAC-3 missiles can be loaded on a launcher versus four PAC-2 missiles. The Army plans to buy 2,200 PAC-3 missiles. The Army had a current inventory of 88 PAC-3 missiles as of July 2003. The average age of the PAC-3 missile is less than 1 year.

Figure 6: Patriot Missile

Source: U.S. Army.

Condition

We assessed the condition of the PAC-3 missile as green because approximately 89 percent of the missiles in the inventory were ready for use as of July 2003. Specifically, of the 88 PAC-3 missiles currently in the inventory, 78 were ready for use and 10 were not. In addition, the Army has not experienced any chronic or persistent problems during production. The PAC-3 missile completed operational testing and was approved for full production of 208 missiles in 2003 and 2004.

Program Strategy

We assessed the program strategy for the PAC-3 missile as green because the Army has developed a long-term strategy for sustaining the PAC-3 inventory, including procurement of 2,200 missiles that will satisfy the total requirement. The Army plans to purchase 1,159 PAC-3 missiles through fiscal year 2009. The remaining 1,041 missiles will be procured after fiscal year 2009. During the low-rate initial production, the Army procured 164 PAC-3 missiles from 1998 to 2002 at $1.7 billion. The Army has completed the low-rate initial production and has been granted approval for full production of 208 PAC-3 missiles beginning in fiscal year 2003, at a total estimated cost of $714 million.

Funding

We assessed the funding for the PAC-3 missile as green primarily because current and projected funding is consistent with the Army's stated requirements to sustain the PAC-3 inventory. The program manager's office has not identified any funding shortfalls for the missile. Funding has been approved for the production of 1,159 PAC-3 missiles through fiscal year 2009 at an average production rate of nearly 100 missiles per year. The total production cost of the 1,159 PAC-3 missiles equates to $4.3 billion. The remaining 1,041 missiles will be procured after fiscal year 2009.

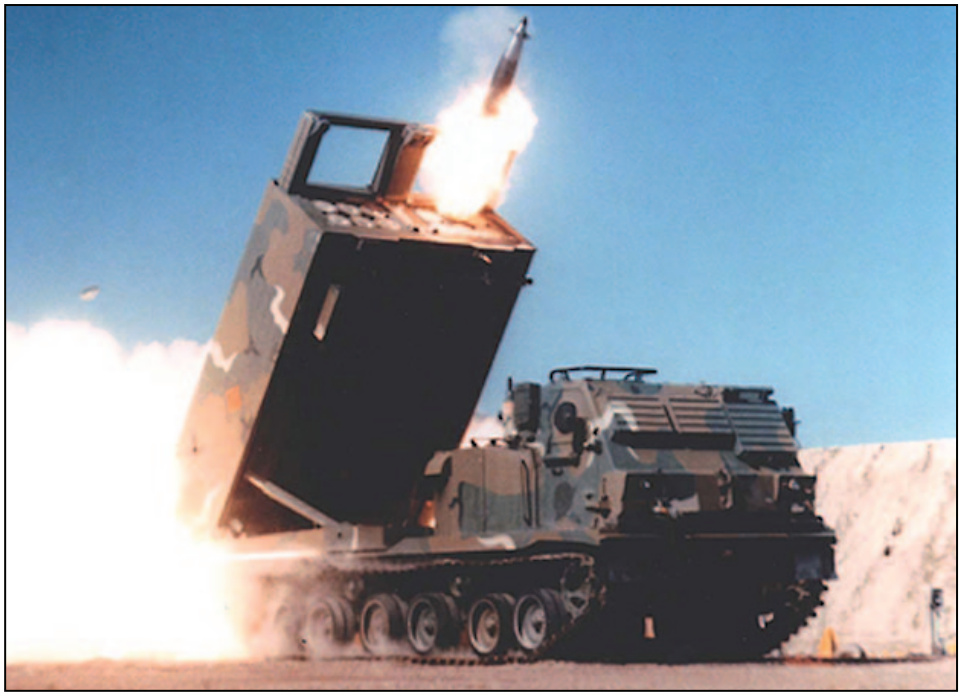
Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability of the PAC-3 missile, Army officials indicated that it successfully fulfilled its wartime mission during Operation Iraqi Freedom, successfully hitting enemy targets within two missile shots. The PAC-3 has also completed the operational testing phase and has been approved for full production.

Guided Multiple Launch Rocket System (GMLRS)

The Guided Multiple Launch Rocket System Dual Purpose Improved Convention Munition (GMLRS-DPICM) is an essential component of the Army's transformation. It upgrades the M26 series MLRS rocket and is expected to serve as the baseline for all future Objective Force rocket munitions. The Army plans to procure a total of 140,004 GMLRS rockets. There are currently no GMLRS rockets in inventory, but it was approved in March 2003 to enter low rate initial production to produce 108 missiles.

Figure 7: Guided Multiple Launch Rocket System



Source: U.S. Army.

Condition

We assessed the condition of the GMLRS as green because the system has demonstrated acceptable performance during the System Development and Demonstration Phase, and was approved to enter low rate initial production in March 2003.

Program Strategy

We assessed the program strategy for the GMLRS as green because the Army has developed a long-term program strategy for sustaining the GMLRS inventory, including procurement of a total of 140,004 missiles that will satisfy the total requirement. Of this total, the Army plans to procure 18,582 missiles by fiscal year 2009. The remaining 121,422 will be procured after fiscal year 2009. The Army approved low rate initial production for a total of 1,920 missiles through fiscal year 2005. The initial operational capability date is scheduled for 2nd quarter fiscal year 2006. The Army has also preplanned a product improvement to the GMLRS-DPICM called the GMLRS—Unitary. This improvement is in the concept development phase and is scheduled to begin a spiral System Development and Demonstration. The Army has not decided how many of the 1,920 initial production rockets will include the guided unitary upgrade.

Funding

We assessed the funding for the GMLRS as green because current and projected funding is consistent with the Army's stated requirements to sustain the GMLRS Munitions program. The GMLRS program is fully funded and properly phased for rapid acquisition. The Army plans to purchase a total of 140,004 GMLRS rockets for $11.7 billion. Of the 140,004 GMLRS rockets, the Army plans to procure 18,582 through fiscal year 2009 for $1.7 billion. The remaining 121,422 rockets will cost the Army approximately $10 billion. In March 2003, the system met all modified low rate initial production criteria to enter the first phase to produce 108 rockets for $36.6 million. Phases II and III will procure the remaining 1,812 rockets during fiscal year 2004 (786 rockets) and fiscal year 2005 (1,026 rockets) for $220.4 million.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability of the GMLRS, Army officials did not identify any specific capability concerns. The GMLRS-DPICM is expected to achieve greater range and precision accuracy. The upgraded improvement will reduce the number of rockets required to defeat targets out to 60 kilometers or greater, and reduce collateral damage. It is also expected to reduce hazardous duds to less than 1 percent.

Air Force

F-16 Fighting Falcon Aircraft

The F-16 is a compact, multi-role fighter with air-to-air combat and air-to-surface attack capabilities. The first operational F-16A was delivered in January 1979. The Air Force currently has 1,381 F-16 aircraft in its inventory, and the average age is about 15 years. The F-16B is a two-seat, tandem cockpit aircraft. The F-16C and D models are the counterparts to the F-16A/B, and incorporate the latest technology. Active units and many reserve units have converted to the F-16C/D. The Air Force plans to replace the F-16 with the F-35 Joint Strike Fighter beginning in 2012.

Figure 8: F-16 Fighting Falcon Aircraft

Source: Defense Visual Information Center.

Condition

We assessed the condition of the F-16 as green because mission capable rates have been near the current goal of 83 percent with mission capable rates for all of the Air Force's Air Combat Command (ACC) F-16s ranging from 75 percent to 79 percent during the past 5 years. Although these rates are below the goal, officials said they were sufficient to provide flying hours for pilot training, and to meet operational requirements. In fiscal year 2002, the planned utilization rate, (i.e., the average number of sorties per

aircraft per month) for ACC aircraft was 17.5 sorties per month, and the actual utilization was 17.7 sorties. Although the average age of the F-16 is about 15 years, there are no material deficiencies that would limit its effectiveness and reliability. Known and potential structural problems associated with aging and accumulated flying hours are being addressed through ongoing depot maintenance programs.

Program Strategy

We assessed the program strategy for the F-16 as green because the Air Force has developed a long-term program strategy for sustaining and replacing the F-16 inventory. The program should ensure that the aircraft remains a viable and capable weapons system throughout the FYDP. Subsequently, the Air Force intends to begin replacing the F-16 with the Joint Strike Fighter (F-35), which is already in development.

Funding

We assessed the funding for the F-16 as yellow because current and projected funding is not consistent with the Air Force's stated requirements to sustain and replace the F-16 inventory. There are potential shortfalls in the funding for depot maintenance programs and modifications during the next 3-5 years. Although funding has been programmed for this work, unexpected increases in depot labor rates have been significant, and additional funding may be required to complete the work. For fiscal year 2004, the Air Force included $13.5 million for the F-16 in its Unfunded Priority List.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability for the F-16, the aircraft has successfully fulfilled its recent wartime missions. F-16 fighters were deployed to the Persian Gulf in 1991 in support of Operation Desert Storm, and flew more sorties than any other aircraft. The F-16 has also been a major player in peacekeeping operations including the Balkans since 1993. Since the terrorist attack in September 2001, F-16s comprised the bulk of the fighter force protecting the skies over the United States in Operation Noble Eagle. More recently, F-16s played a major role in Afghanistan in Operation Enduring Freedom, and have performed well in combat in Operation Iraqi Freedom, in which the F-16 once again provided precision-guided strike capabilities and suppression of

enemy air defenses. During Operation Iraqi Freedom, the Air Force deployed over 130 F-16s that contributed significantly to the approximately 8,800 sorties flown by Air Force fighter aircraft.

B-2 Spirit Bomber

The B-2 is a multi-role 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 currently has 21 B-2 aircraft in its inventory, and the average age is about 9 years. The first B-2 was deployed in December 1993, and currently all B-2s in the inventory are configured with an enhanced terrain-following capability and the ability to deliver the Joint Direct Attack Munition and the Joint Stand Off Weapon.

Figure 9: B-2 Spirit Bomber

Source: Defense Visual Information Center.

Condition

We assessed the condition of the B-2 as yellow because the B-2 did not meet its mission capable goal of 50 percent. Officials said that the aircraft itself is in good condition, but it is the maintainability of its stealth characteristics that is driving the low mission capable rates. Officials pointed out that despite low mission capable rates the B-2 has been able to meet requirements for combat readiness training and wartime missions. For example, four B-2 aircraft were deployed and used during Operation Iraqi Freedom, and maintained a mission capable rate of 85 percent. Mission capable rates have improved slightly, and officials said that recent innovations in low observable maintenance technology and planned modifications are expected to foster additional improvement.

Program Strategy

We assessed the program strategy for the B-2 as green because the Air Force has developed a long-term program strategy for sustaining the B-2 inventory. Program plans appear to ensure the viability of this system through the Future Years Defense Plan. Procurement of this aircraft is complete. The Air Force plans to maintain and improve its capabilities, ensuring that the B-2 remains the primary platform in long-range combat aviation.

Funding

We assessed the funding for the B-2 as green because current and projected funding is consistent with the Air Force's stated requirements to sustain the B-2 inventory. The programmed funding should allow execution of the program strategy to sustain, maintain, and modify the system through the Future Years Defense Plan. The B-2 is of special interest to the Congress, which requires an annual report on this system, including a schedule of funding requirements through the Future Years Defense Plan. No items specific to the B-2 were included in the Air Force's fiscal year 2004 Unfunded Priority List.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability for the B-2, the aircraft has successfully fulfilled its wartime missions despite current condition weaknesses. The Air Force demonstrated the aircraft's long-range strike capability by launching missions from the United States, striking targets in Afghanistan, and returning to the States. More recently, the Air Force deployed four B-2 aircraft to support Operation Iraqi Freedom, where they contributed to the 505 sorties flown by bombers during the conflict. The B-2 Annual Report to the Congress states that the B-2 program plan will ensure that the B-2 remains the primary platform in long-range combat aviation.

C-5 Galaxy Transport Aircraft

The C-5 Galaxy is the largest of the Air Force's air transport aircraft, and one of the world's largest aircraft. It can carry large cargo items over intercontinental ranges at jet speeds and can take off and land in relatively short distances. It provides a unique capability in that it is the only aircraft that can carry certain Army weapon systems, main battle tanks, infantry vehicles, or helicopters. The C-5 can carry any piece of army combat equipment, including a 74-ton mobile bridge. With aerial refueling, the aircraft's range is limited only by crew endurance. The first C-5A was delivered in 1969. The Air Force currently has 126 C-5 aircraft in its inventory, and the average age is about 26 years.

Figure 10: C-5 Galaxy Transport Aircraft

Source: Defense Visual Information Center.

Condition

We assessed the condition of the C-5 as yellow because it consistently failed to meet its mission capable goal of 75 percent; however, mission capable rates have been steadily improving and, in April 2003, active duty C-5s exceeded the goal for the first time. Program officials pointed out that, although the total fleet has never achieved the 75 percent goal, there has been considerable improvement over time, with the rate rising from about 42 percent in 1971 to about 71 percent in 2003. The Air Force Scientific Advisory Board has estimated that 80 percent of the airframe structural

service life remains. Furthermore, Air Force officials said that the two major modification programs planned, the avionics modernization program and reliability enhancement and re-engining program, should significantly improve mission capable rates.

Program Strategy

We assessed the program strategy for the C-5 as green because the Air Force has developed a long-term program strategy for sustaining and modernizing the aging C-5 inventory. The Air Force has planned a two-phase modernization program through the future years defense program that is expected to increase the aircraft's mission capability and reliability. The Air Force plans to modernize the C-5 to improve aircraft reliability and maintainability, maintain structural and system integrity, reduce costs, and increase operational capability. Air Force officials stated that the C-5 is expected to continue in service until about 2040 and that, with the planned modifications, the aircraft could last until then. As an effort to meet strategic airlift requirements, the Air Force has contracted to buy 180 C-17s, will retire 14 C-5s by fiscal year 2005, and may retire additional aircraft as more C-17s are acquired.

Funding

We assessed the funding for the C-5 as yellow because current and projected funding is not consistent with the Air Force's stated requirements to sustain and modernize the aging C-5 inventory. According to officials, the program lost production funding because of problems during the early stage of the program. Currently 49 aircraft are funded for the avionics program through the Future Years Defense Plan. For fiscal year 2004, the Air Force included $39.4 million in its Unfunded Priority List to restore the program to its prior timeline.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability of the C-5, Air Force officials indicated that the aircraft has successfully fulfilled its recent wartime missions. The Air Force has not noted any factors or capability concerns that would prevent the C-5 from effectively performing its wartime mission.

KC-135 Stratotanker Aircraft

The KC-135 is one of the oldest airframes in the Air Force's inventory, and represents 90 percent of the tanker fleet. Its primary mission is air refueling, and it supports Air Force, Navy, Marine Corps, and allied aircraft. The first KC-135 was delivered in June 1957. The original A models have been re-engined, modified, and designated as E, R, or T models. The E models are located in the Air Force Reserve and Air National Guard. The total inventory of the KC-135 aircraft is 543, and the average age is about 43 years.

Figure 11: KC-135 Stratotanker Aircraft

Source: Defense Visual Information Center.

Condition

We assessed the condition of the KC-135 as yellow because it maintained mission capable rates at or near the 85 percent goal despite the aircraft's age and potential corrosion of its structural components. Although the aircraft is about 43 years old, average flying hours are slightly over a third of its expected life of 39,000 hours, and an Air Force study projected the KC-135 would last until about 2040. All KC-135s were subjected to an aggressive corrosion preventive program and underwent significant modifications, including replacement of the cockpit. Nevertheless, citing increases in the work needed during periodic depot maintenance, costs, and risk of the entire fleet being grounded, the Air Force decided to accelerate recapitalization from 2013 to about 2006.

Program Strategy

We assessed the program strategy for the KC-135 as red because the Air Force has developed a long-term program strategy to modernize the aging KC-135 tanker fleet, but it has not demonstrated the urgency of acquiring replacement aircraft and has not defined the requirements for the number of aircraft that will be needed. As we stated in testimony before the House Committee on Armed Services, Subcommittee on Projection Forces, the department does not have a current, validated study on which to base the size and composition of either the current fleet or a future aerial refueling force.[1] The Air Force has a large fleet of KC-135s (about 543), which were flown about 300 hours annually between 1995 and September 2001. Since then utilization is about 435 hours per year. Furthermore, the Air Force has a shortage of aircrews to fly the aircraft it has. In Operation Iraqi Freedom, a relatively small part of the fleet was used to support the conflict (149 aircraft). Without a definitive analysis, it is difficult to determine if recapitalization is needed and what alternatives might best satisfy the requirement.

Funding

We assessed the funding of the KC-135 as red because current and future funding is not consistent with the Air Force stated requirements to sustain and modernize the KC-135 tanker fleet. The Air Force has not addressed recapitalization funding in the current defense budget or in the Future Years Defense Plan. The Air Force plans to begin acquiring new aircraft almost immediately, but does not want to divert funding from other programs to pay for them. The Air Force proposed a unique leasing arrangement with Boeing that will provide new tankers as early as 2006. There remains controversy over the lease terms, aircraft pricing, and how the Air Force will pay for the lease.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability of the KC-135, Air Force officials indicated that the aircraft has successfully fulfilled its recent wartime missions despite current condition

[1] U.S. General Accounting Office, *Military Aircraft: Information on Air Force Aerial Refueling Tankers*, GAO-03-938T (Washington, D.C.: June 4, 2003).

problems. The KC-135 comprised 149 of the 182 tanker aircraft the Air Force used during Operation Iraqi Freedom, and those aircraft flew almost 6,200 sorties and offloaded over 376 million pounds of fuel. The KC-135 maintained a mission capable rate above the current goal of 85 percent during Operation Iraqi Freedom.

Conventional Air Launched Cruise Missile (CALCM)

The CALCM is an accurate long-range standoff weapon with an adverse weather, day/night, and air-to-surface capability. It employs a global positioning system coupled with an inertial navigation system. It was developed to improve the effectiveness of the B-52 bombers and became operational in January 1991. Since initial deployment, an upgraded avionics package, including a larger conventional payload and a multi-channel global positioning system receiver, has been added on all of the missiles. The CALCM total inventory is about 478, and the average age is about 15 years.

Figure 12: Conventional Air Launched Cruise Missile

Source: Defense Visual Information Center.

Condition

We assessed the condition of the CALCM as green because the CALCM has demonstrated high reliability. The Air Force has not noted any chronic factors or problems that limit the effectiveness or reliability of the missile. However, according to officials, the diagnostics test equipment needs to be upgraded because it is old and was designed to support less sophisticated missiles. Currently, the Air Force uses the same test equipment for both the conventional and nuclear weapons.

Program Strategy

We assessed the program strategy for the CALCM as green because the Air Force has a long-term program strategy for sustaining and modernizing its current inventory of cruise missiles. The Air Force does not have any future plans to convert or purchase any additional nuclear missiles. The Joint Chief of Staff must authorize the use of the conventional weapons and approve the program in order to procure additional missiles. As the inventory is depleted, the conventional weapon will be replaced with other systems with similar capabilities, such as the Joint Air-to-Surface Standoff Missile, which is currently under development. The Joint Air-to-Surface Standoff Missile will not be a one-for-one replacement for the conventional missile.

Funding

We assessed the funding for the CALCM as green because current and projected funding is consistent with the Air Force stated requirements to sustain and modernize its cruise missile inventory. Procurement of the cruise missile is complete, and no funding has been provided for research and development or procurement in the fiscal year 2003 budget.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability for the CALCM, Air Force officials indicated that it successfully fulfilled its recent wartime missions. These officials indicated that the cruise missile played a significant role in the initial strikes during Operation Iraqi Freedom. During Operation Iraqi Freedom, 153 missiles were expended, and the version that is designed to penetrate hard targets was first employed.

Joint Direct Attack Munition (JDAM)

The Joint Direct Attack Munition is a guidance tail kit that converts existing unguided bombs into accurate, all-weather "smart" munitions. This is a joint Air Force and Navy program to upgrade the existing inventory of 2,000 and 1,000-pound general-purpose bombs by integrating them with a guidance kit consisting of a global positioning system-aided inertial navigation system. In its most accurate mode, the system will provide a weapon circular error probable of 13 meters or less. The JDAM first entered the inventory in 1998. The total projected inventory of the JDAM is about 92,679, and the current average age is less than 5 years. Future upgrades will provide a 3-meter precision and improved anti-jamming capability.

Figure 13: Joint Direct Attack Munition

Source: Defense Visual Information Center.

Condition

We assessed the condition of the JDAM as green because it consistently met its reliability goal of 95 percent. The munitions are used as they

become available; therefore, no maintenance is involved. Although the Air Force does not monitor the condition of munitions, they keep track of each component of the guidance kit, which is tracked for serviceability. The kit is under a 20-year warranty. The munitions are purchased serviceable and are tested before used by the operational units. In addition to high reliability, the JDAM can be purchased at a low cost and are being delivered more than three times as fast as planned.

Program Strategy

We assessed the program strategy for the JDAM as green because the Air Force has a long-term program strategy for sustaining and maintaining its production of the munitions. The Joint Direct Attack Munition requirements are driven by assessments of war readiness and training requirements. Currently, Boeing is in full production and is increasing its production to about 2,800 per month for the Air Force and Navy, an increase from approximately 700–900 a month. The second production line is up and running.

Funding

We assessed the funding for the JDAM as green because current and projected funding is consistent with the Air Force's stated requirements to sustain and maintain production of the munitions. The President's fiscal year 2003 budget provided funding for the procurement of the system through the future years defense plan. Air Force officials stated that the munitions have all the funding it needs; however, it is limited by the production capability of its contractor, Boeing.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability of the JDAM, Air Force officials indicated that it has successfully fulfilled its recent wartime missions. The weapon system played a role in operations in Kosovo, Afghanistan, and Iraq. According to the Air Force, the weapon has operationally proven to be more accurate, reliable, and effective than predicted. The Air Force has not noted any factors or capability concerns that would prevent the Joint Direct Attack Munitions from effectively fulfilling its wartime mission.

Navy

DDG-51 Arleigh Burke Class Destroyer

Navy Destroyers are multi-mission combatants that operate offensively and defensively, independently, or as part of carrier battle groups, surface action groups, and in support of Marine amphibious task forces. This is a 62-ship construction program, with 39 in the fleet as of 2003. The average age of the ships is 5.8 years, with the Arleigh Burke (DDG-51) coming into service in 1991. The follow-on program is the DD(X), with initial construction funding in 2005 and delivery beginning 2011.

Figure 14: DDG-51 Arleigh Burke Class Destroyer

Source: Defense Visual Information Center.

Condition

We assessed the condition of the DDG-51 as yellow because work programmed for scheduled maintenance periods is often not accomplished. Because of budget limitations for each ship's dry-dock period and a Navy effort to level port workloads and provide stability in the industrial base, maintenance items are often cut from the planned work

package during dry-dock periods. Those items are then deferred to the next scheduled docking or accomplished as possible in the ship's continuous maintenance phase. Deferring maintenance affects corrosion issues, particularly the ship's hull. Engineering and combat systems have priority for resources with desirable, though not necessarily essential, crew quality of life improvements deferred to a later time. The Navy balances risk between available resources and deferring maintenance to make the most cost-effective decision and ensure ships deploy without or with minimal safety or combat system deficiencies.

Program Strategy

We assessed the program strategy for the DDG-51 as yellow because the Navy has developed a long-term program strategy for sustaining and upgrading the DDG-51 fleet; however, budget cuts in the Navy's shipbuilding program affect upgrades to the warfighting systems and may lead to potential problems in the industrial base when transitioning from DDG to DD(X) ships. Navy officials noted that these budget cuts prevent them from buying the latest available technologies. These technologies are usually in warfighting systems, such as command and control and system integration areas. Management of the transition period from DDG to DD(X) shipbuilding between 2005 and 2008 will be key to avoid problems from major fluctuations in the workload and workforce requirements.

Funding

We assessed the funding for the DDG-51 as yellow because current and projected funding is not consistent with the Navy's statement requirements to sustain and upgrade the DDG-51 fleet. Lack of multiyear budget authority creates budget inefficiencies because the Navy is required to spend supplemental and 1-year funds within the year in which it is appropriated. The Navy attempts to reduce ship maintenance costs by leveling the maintenance workload for ship contractors, which provides the Navy and contractors greater flexibility and predictability. The lack of multiyear budgeting and the need to spend supplemental and 1-year funds in the current year limits that effort. Ports are not equipped or manned to accomplish the volume of work required in the time-span necessary to execute 1-year appropriations. In some cases, differences between the Navy estimate of scheduled maintenance costs and the contractor bid to do

the work requires cuts to the ship's planned work package, further contributing to the deferred maintenance backlog.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability for the DDG-51, Navy officials raised a number of capability concerns. Specifically, these officials indicated that the DDG-51 has successfully fulfilled its recent wartime mission, but with some limitations such as communications shortfalls and force protection issues. Although the DDG-51 class is the newest ship in the fleet with the most up to date technologies, fleet officers said there is insufficient bandwidth for communications during operations. Navy officials cited effective management of available communications assets rather than the amount of available bandwidth as the more immediate challenge. In the current threat environment, force protection issues remain unresolved. The use of the Ridged Hull Inflatable Boat (RHIB) during operations at sea without on-board crew-served weapons and hardening protection concerns commanders. The small caliber of sailors' personal and crew-served weapons limits their effectiveness against the immediate and close-in threat from small boat attack.

FFG-7 Oliver Hazard Perry Class Frigate

Navy FFG-7 Frigates are surface combatants with anti-submarine warfare (ASW) and anti-air warfare (AAW) capabilities. Frigates conduct escort for amphibious expeditionary forces, protection of shipping, maritime interdiction, and homeland defense missions. There are 32 FFGs in the fleet, with 30 programmed for modernization. The average age of the fleet is 19 years. The FFGs are expected to remain in the fleet until 2020.

Figure 15: FFG-7 Oliver Hazard Perry Class Frigate

Source: Defense Visual Information Center.

Condition

We assessed the condition of the FFG-7 as yellow because work programmed for scheduled maintenance periods is often not accomplished. Because of budget limitations for each ship's dry-dock period and a Navy effort to level port workloads and provide stability in the industrial base, maintenance items are often cut from the planned work package during dry-dock periods. These items are then deferred to the next scheduled docking or accomplished as possible in the ship's continuous maintenance phase. Deferring maintenance affects corrosion issues, particularly the ship's hull. Engineering and combat systems have priority for resources with desirable, though not necessarily essential, crew quality of life improvements deferred to a later time. The Navy balances risk between available resources and deferring maintenance to make the most

cost-effective decision and ensure ships deploy without or with minimal safety or combat system deficiencies. There is the additional burden of maintaining older systems on the frigates.

Program Strategy

We assessed the program strategy for the FFG-7 as yellow because the Navy has developed a long-term program strategy for sustaining and modernizing the FFG-7 fleet; however, the program is susceptible to budget cuts. The modernization program is essential to ensure the frigates' continued viability. There is also uncertainty about the role frigates will play as the Littoral Combat Ship is developed.

Funding

We assessed the funding for the FFG-7 as yellow because current and projected funding is not consistent with the Navy's stated requirements to sustain and modernize the FFG-7 fleet. Uncertainty about modernization program funding and budget inefficiencies created by the lack of multiyear budget authority and the requirement to spend supplemental and 1-year funds when they are appropriated. The Navy attempts to reduce ship maintenance costs by leveling the maintenance workload for ship contractors, which provides the Navy and contractors greater flexibility and predictability. The lack of multiyear budget authority and the need to spend supplemental and 1-year funds in the current year in which they are appropriated limits that effort. Ports are not equipped or manned to accomplish the volume of work required in the time span necessary to execute 1-year appropriations. In some cases, differences between the Navy estimate of scheduled maintenance costs and the contractor bid to do the work requires cuts to the ship's planned work package, further contributing to the deferred maintenance backlog.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability of the FFG-7, Navy officials identified a number of capability concerns including communications shortfalls and potential vulnerabilities to air warfare. The frigate's ability to operate in a battle group environment is limited by insufficient bandwidth and lack of command circuits for communications requirements. The Navy shut down the frigate's missile launcher because of excessive maintenance costs. Ship commanders in the

fleet expressed concern about potentially deploying with only one of three compensating systems for anti-air warfare missions, the on-board 76-mm rapid-fire gun (CWIS-1B, Close-In Weapons System). Officials in the program manager's office stated fielding plans were in place for the other two systems, the MK53 Decoy Launch System, called NULKA, and the Rolling Airframe Missile (RAM). These systems will help mitigate the frigate's vulnerability after shutting down the missile launcher. The frigate's value to surface groups operating independently of carriers is as a helicopter platform.

F/A-18 Hornet/Super Hornet Aircraft

The F/A-18 is an all-weather fighter and attack aircraft expected to fly in the fleet to 2030. There are six models in the current inventory of 875: A, 178; B, 30; C, 405; D, 143; E, 55; and F, 64. Average age in years is: A, 16.4; B, 18.0; C, 10.6; D, 10.1; E, 1.7; and F, 1.5. The Navy plans to eventually replace the F/A-18 with the Joint Strike Fighter.

Figure 16: F/A-18 Hornet/Super Hornet Aircraft

Source: Defense Visual Information Center.

Condition

We assessed the condition of the F/A-18 as yellow because it consistently failed to meet mission capable and fully mission capable goals of 75 percent and 58 percent, respectively. Squadrons that are deployed or are training for deployment generally exceed these goals. Maintaining the aircraft is increasingly difficult because of personnel shortfalls, increased flying requirements, and lack of ground support equipment. Navy depot personnel indicated that the availability of spare parts remains the largest issue in repairing and returning aircraft to the fleet.

Program Strategy

We assessed the program strategy for the F/A-18 as yellow because the Navy has developed a long-term program strategy for sustaining and maintaining the F/A-18 fleet; however, it lacks a common baseline capability for all aircraft. Navy officials stated managing the configuration

of the various versions of the aircraft is challenging. Each version of the aircraft has different repair parts, unique on-board equipment, and specially trained maintainers and pilots. To increase the service life of the aircraft, the Navy initiated the Center Barrel Replacement (CBR) program. CBR replaces those parts of the F/A-18 fuselage that have the greatest stress placed on them from landing on aircraft carriers. The Navy is also initiating a Navy/Marine Tactical Air Integration program that combines low flying-hour / low carrier-landing aircraft for carrier use and high flying-hour / high carrier-landing aircraft for shore basing. If CBR is adequately funded and the Tactical Air Integration initiative proceeds, the F/A-18 will remain a viable system into the future.

Funding

We assessed the funding for the F/A-18 as yellow because current and projected funding is not consistent with the Navy's stated requirements to sustain and maintain the F/A-18 fleet. The Navy intends to fly the F/A-18A-D models until 2020 and the E/F models to at least 2030. Funding for ground support equipment for the A–D models was eliminated, leaving operators and program managers to find resources elsewhere. Program dollars are often drawn back, pushing modernization to the out years. This is a problem for the CBR program that is $72 million short in the current Future Years Defense Plan. Navy personnel state that the CBR program must be fully funded to meet the number of aircraft required to support the Tactical Air Integration initiative and standards in the new Fleet Response Plan.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability for the F/A-18, Navy officials indicated that the aircraft has successfully fulfilled its wartime missions despite current condition problems. The A-D models, along with the E/F models coming into the inventory, provide a multi-capable aircraft for the many roles the war fighting commanders require. These multi-role capabilities were demonstrated during Operation Iraqi Freedom with the F/A-18 performing air, ground attack, and refueling missions. Navy officials stated that they will do whatever is necessary to accomplish the mission, but raised concerns that maintenance costs are increasing due to current conditions problems. Specifically these officials stated that increased maintenance man hours per aircraft sortie, increased cannibalization rates, and decreased readiness rates are creating more stress on the aircraft and the personnel who fly and maintain them.

EA-6B Prowler Aircraft

The EA-6B is an integrated electronic warfare aircraft system combining long-range, all-weather capabilities with advanced electronic countermeasures. Its primary mission is to support strike aircraft and ground troops by jamming enemy radar, data links, and communications. The current inventory is 121 with an average age of 20.7 years. The follow-on aircraft is the E/A-18G Growler Airborne Electronic Attack aircraft, a variant of the F/A-18 E/F.

Figure 17: EA-6B Prowler Aircraft

Source: Defense Visual Information Center.

Condition

We assessed the condition of the EA-6B as yellow because it consistently failed to meet the mission capable goal of 73 percent. However, squadrons training for deployment or those that are deployed generally exceed this goal. Fatigue life expenditure (FLE), the predictable rate of wear and deterioration of wing center sections and outside wing panels, is a critical problem and has caused aircraft to be temporarily grounded or placed under flying restrictions to mitigate risk to the aircraft. Wing center sections are that part of the plane where the wings and fuselage attach. Outer wing panels are that part of the wing that fold up when the plane is onboard carriers. The Navy is aggressively managing the problem and has programs in place to replace these items in the near term.

Program Strategy

We assessed the program strategy for the EA-6B as yellow because the Navy has developed a long-term program strategy for upgrading the EA-6B fleet; however, aircraft capability requirements may not be met in the future. The Improved Capability 3rd Generation (ICAPIII) upgrade is a significant technology leap in jamming capabilities over the current second-generation capability. ICAPIII will counter threats through 2015 and provides an advanced jamming capability, accurate target location, and full circle coverage. By 2007, 30 percent of the fleet will be ICAPIII equipped. The Navy plans for the follow-on EA-18G Growler to join the fleet between 2008 and 2012. The Navy purchase plan calls for 90 aircraft with over two-thirds (65 aircraft) procured by 2009.

Funding

We assessed the funding for the EA-6B as red because current and projected funding is not consistent with the Navy's stated requirements to sustain and upgrade the EA-6B fleet. The Navy relies upon additional congressional appropriations rather than requesting funds to meet program requirements. In fiscal year 2003, the Congress appropriated an additional 17 percent ($40 million) over DOD's request for the EA-6B. The Navy is not funding modernization programs to the stated requirements. The Navy's requirement for the ICAPIII electronic attack upgrade is 42 systems, although the Navy is only funding 35 systems. According to the program manager, funding for replacing the EA-6B's outside wing panels is still uncertain.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability for the EA-6B, Navy officials indicated that the aircraft has successfully fulfilled its wartime missions with some limitations. Potential funding shortfalls and capability limitations may affect the aircraft's ability to perform its mission. Only 98 out of 108 aircraft in the Navy's EA-6B inventory are available to the fleet. Current EA-6B capabilities can meet the threat, although without an increase in the number of ICAPIII capable aircraft, the Navy may not be able to meet future threats. According to Navy officials, there is an impending severe impact on warfighting capabilities if the Navy does not receive fiscal year 2003 procurement funding for outside wing panels as requested. Specifically, the combination

of the expected wear and tear on the panels and the normal aircraft attrition rate could reduce the total EA-6B inventory by 16 in 2005.

LPD-4 Amphibious Transport Dock Ship

The LPD-4 ships are warships that embark, transport, and land elements of a Marine landing force and its equipment. There are currently 11 in the inventory with an average age of 35 years. These ships are expected to remain in the fleet until 2014. The San Antonio-class LPD-17 (12-ship construction program, LPD-17 through LPD-28) will eventually replace the LPD-4.

Figure 18: LPD-4 Amphibious Transport Dock Ship

Source: Defense Visual Information Center.

Condition

We assessed the condition of the LPD-4 as yellow because work programmed for scheduled maintenance periods is often not accomplished. Because of budget limitations for each ship's dry-dock period and a Navy effort to level port workloads and provide stability in the industrial base, maintenance items are often cut from the planned work package during dry-dock periods. These items are then deferred to the next scheduled docking or accomplished as possible in the ship's continuous maintenance phase. Deferring maintenance increases corrosion problems,

particularly for the ship's hull. There are consistent problems with the engagement system for on-board weapons and the hull, mechanics, and electrical (HME) systems associated with the ship's combat support system. The age of the LPD-4 fleet directly contributes to the deteriorating condition of the ships, particularly the hydraulic systems. The Navy balances risk between available resources and deferring maintenance to make the most cost-effective decision and ensure ships deploy without or with minimal safety or combat system deficiencies.

Program Strategy

We assessed the program strategy for the LPD-4 as green because the Navy has developed a long-term program strategy to sustain and replace amphibious dock ships and improve support to Marine amphibious forces. The Extended Sustainment Program was initiated because of delay in delivery of the new LPD-17 class ships. The program will extend the service life of 6 of 11 ships for an average of 7.3 years to the 2009–2014 time frame. The program consists of 37 prioritized work items endorsed by the Navy. The follow-on LPD-17 ship construction program incorporates innovative design and total ownership cost initiatives; however, no modernization or upgrades are planned in the construction timeline from 1999 to 2013.

Funding

We assessed the funding for the LPD-4 as yellow because current and projected funding is not consistent with the Navy's stated requirements to sustain and replace amphibious dock ships. The age and decommissioning schedule for the ships means funding priorities are placed elsewhere. The Navy is seeking cost savings through efforts to level the industrial base in ports and provide predictability and management flexibility for programmed maintenance work. A significant limitation in that effort is the inability to use multiyear budgeting and the need to spend supplemental and 1-year funds in the year of appropriation. Ports are often not equipped and manned to accomplish the volume of work required in the time-span necessary to execute 1-year budgets.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability for the LPD-4, Navy officials did not identify any specific capability concerns. These officials indicated that the LPD-4 fulfilled its

recent wartime missions of transporting and moving Marines and their equipment ashore.

Standard Missile-2 Surface-to-Air Missile

The Standard Missile-2 (SM-2) is a medium to long-range, shipboard surface- to-air missile with the primary mission of fleet area air defense and ship self-defense, and a secondary mission of anti-surface ship warfare. The Navy is currently procuring only the Block IIIB version of this missile. While the actual number in the inventory is classified, the Navy plans to procure 825 Block IIIB missiles between fiscal years 1997 and 2007. Currently, 88 percent of the inventory is older than 9 years. A qualitative evaluation program adjusted the initial 10-year service life out to 15 years.

Figure 19: Standard Missile-2 Surface-to-Air Missile

Source: Defense Visual Information Center.

Condition

We assessed the condition of the Standard Missile–2 as red because it failed to meet the asset readiness goal of 87 percent and only 2 of 5 variants achieved the goal in fiscal year 2002. The asset readiness goal is the missile equivalent of mission capable goals. The percent of non-ready for issue missiles (currently at 23 percent of the inventory) will increase because of funding shortfalls.

Program Strategy

We assessed the program strategy for the Standard Missile-2 as yellow because the Navy has developed a long-term program strategy for upgrading the Standard Missile-2 inventory; however, the Navy's strategy mitigates risk with complementary systems as the SM-2 inventory draws down and upgrades to counter known threats are cut from the budget. In 2002, the Navy cancelled production of the most capable variant at the time, the SM-2 Block IVA. Currently, the most capable missile is the SM-2 Block IIIB, which is the only variant in production. This missile will be the main anti-air warfare weapon on board Navy ships into the next decade. Improved Block IIIB missiles will be available in 2004. The SM-6 Extended Range Active Missile (ERAM) is programmed for initial production in 2008 and will be available to the fleet in 2010.

Funding

We assessed the funding for the Standard Missile-2 as red because current and projected funding is not consistent with the Navy's stated requirements to upgrade the Standard Missile-2 inventory. There is a $72.6 million shortfall for maintenance and a shortfall of approximately $60 million for procurement in the current Future Years Defense Plan.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability of the Standard Missile-2, Navy officials indicated that it successfully fulfilled its recent wartime missions but with some limitations. Block IIIB and improved Block IIIB missiles successfully counter the threats they were designed to counter. However, the most capable variant in the current inventory cannot handle the more sophisticated known air

threats. The Navy lost a capability to intercept extended range and ballistic missiles when development of the Block IVA variant was cancelled. The improved Block IIIB missiles will mitigate some risk until the SM-6 ERAM is deployed in 2010. Further, Navy officials stated that the Navy accepts an element of risk until the SM-6 is deployed because the threat is limited in both the number of missiles and the scenarios where those missiles would be employed. Officials also described the Navy's anti-air warfare capability as one of complementary systems and not singularly dependent on the SM-2 missile. The Navy successfully increased the deployment of these missiles to the fleet for the recent operations in Afghanistan and Iraq, but the growing shortage of ready-for-issue missiles in future years could severely limit the Navy's ability to meet future requirements.

Tomahawk Cruise Missile

The Tomahawk Cruise Missile is a long-range, subsonic cruise missile used for land attack warfare, and is launched from surface ships and submarines. The current inventory is 1,474 missiles, with an average age of 11.88 years and a 30-year service life. During Operation Iraqi Freedom, 788 Tomahawk's were expended. The follow-on Tactical Tomahawk (TACTOM) is scheduled to enter the inventory in 2005.

Figure 20: Tomahawk Cruise Missile

Source: Defense Visual Information Center.

Condition

We assessed the condition of the Tomahawk Cruise Missile as green because it consistently met asset readiness goals in recent years. The asset readiness goal is classified.

Program Strategy

We assessed the program strategy for the Tomahawk Cruise Missile as red because the Navy has developed a long-term program strategy for upgrading the Tomahawk Cruise Missile inventory; however, the future inventory level will not be determined until funding questions are resolved. During Operation Iraqi Freedom, 789 Tomahawks were expended with a remaining inventory of 1,474. The replenishment missiles are all programmed to be the new Tactical Tomahawk missile. Even when funding is appropriated and executed this fiscal year, the first available date for new missiles entering the inventory will be late 2005–2006.[2] A remanufacturing program planned for 2002–2004 is upgrading the capabilities of older missiles. There are 249 missiles remaining to be upgraded.

Funding

We assessed the funding for the Tomahawk Cruise Missile as red because current and projected funding is not consistent with the Navy's stated requirements to replenish the inventory and new production is unresolved. Inventory replenishment funding was authorized by the Congress and, at the time of our review, was in conference to resolve differences between the two bills.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability for the Tomahawk Cruise Missile, Navy officials indicated that it has successfully fulfilled its wartime missions during recent operations in Afghanistan and Iraq. Improved Tomahawks came into the inventory in 1993 and provided enhanced accuracy on targets. The newest variant, the Tactical Tomahawk (TACTOM), is scheduled to come into the inventory in 2005 and improves the missile with an upgraded guidance system and in-flight re-programming capability. This upgrade program is also expected to lower the missile's production unit and life-cycle support costs.

[2] In its written comments on a draft of this report, DOD stated that the Tactical Tomahawk is scheduled to enter the inventory in 2004 with initial operational capability in May 2004.

Marine Corps

AH-1W Super Cobra Helicopter

The AH-1W Super Cobra provides en route escort and protection of troop assault helicopters, landing zone preparation immediately prior to the arrival of assault helicopters, landing zone fire suppression during the assault phase, and fire support during ground escort operations. There are 193 aircraft in the inventory with an average age of 12.6 years.

Figure 21: AH-1W Super Cobra Helicopter

Source: Defense Visual Information Center.

Condition

We assessed the condition of the AH-1W as yellow because it consistently failed to meet its mission capable goals from fiscal year 1998 to fiscal year 2002. Although Camp Pendleton and Camp Lejeune AH-1W maintainers cited insufficient spare parts and cannibalization as problems, overall, operators were always positive in their comments about the condition of the AH-1W. Condition concerns will be remedied in the near term by the AH-1W upgrade program that is proceeding as scheduled with an October 1, 2003, anticipated start date.

Program Strategy

We assessed the program strategy for the AH-1W as green because the Marine Corps has developed a long-term program strategy for upgrading the AH-1W helicopter to the AH-1Z, achieving 85 percent commonality with the UH-1Y helicopter fleet. Estimated savings of $3 billion in operation and maintenance costs over the next 30 years have been reported. Additionally, the upgrade program will enhance the helicopter's speed, maneuverability, fuel capacity, ammunition capacity, and targeting systems.

Funding

We assessed the funding for the AH-1W as green because current and projected funding is consistent with the Marine Corps' stated requirements to sustain and upgrade the AH-1W fleet. Although we assessed funding as green, Marine Corps officials at Camp Pendleton cited the need for additional funding for spare parts and noted that cost overruns have occurred in recent years for the AH-1W upgrade program.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability of the AH-1W, Marine Corps officials indicated that it successfully fulfilled its recent wartime missions but with some limitations. Specifically, prior to Operation Iraqi Freedom, Marine Corps operators at Camp Pendleton stated that the AH-1W's ammunition and fuel capacity was insufficient for some operations, such as Afghanistan. The AH-1Z upgrade program, however, will address these concerns.

CH-46E Sea Knight Helicopter

The Sea Knight helicopter provides all weather, day/night, night-vision capable assault transport of combat troops, supplies and equipment during amphibious and subsequent operations ashore. There are 226 aircraft in the inventory. The CH-46E is more than 30 years old. The MV-22 Osprey is the planned replacement aircraft for the CH-46E.

Figure 22: CH-46E Sea Knight Helicopter

Source: Defense Visual Information Center.

Condition

We assessed the condition of the CH-46E as red because it consistently failed to meet mission capable goals between fiscal year 1998 and fiscal year 2002. The operational mean time between failures decreased from 1.295 hours to 0.62 hours during the course of our review. Marine Corps officials cited concern over the aircrafts age and the uncertainty about the fielding of the MV-22 to replace the Sea Knight. Marine Corps officials called the current maintenance programs critical to meeting condition requirements.

Program Strategy

We assessed the program strategy for the CH-46E as yellow because the Marine Corps has developed a long-term program strategy to sustain and replace the CH-46E fleet. The sustainment strategy, dated August 19, 2003, outlines the service's plans to sustain the CH-46E until retirement in 2015 or longer. However, according to press reports, DOD has decided to reduce the purchase of replacement systems by about 8 to 10 aircraft over the next few years. If DOD buys fewer replacement systems, the service will have to adjust the sustainment strategy to retain additional CH-46E aircraft in its inventory longer.

Funding

We assessed the funding for the CH-46E as red because current and projected funding is not consistent with the Marine Corps' stated requirements to sustain and replace the CH-46E fleet. Marine Corps officials asserted continued funding for maintaining the CH-46E is essential. The fiscal year 2004 budget request included a request for funding of safety improvement kits, long-range communications upgrade, aft transmission overhaul, and lightweight armor. The Navy lists CH-46E safety improvement kits as a $4 million unfunded requirement.[3]

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability of the CH-46E, Marine Corps raised a number of specific capability concerns. Specifically, these officials stated that the intended mission cannot be adequately accomplished due to lack of payload. The CH-46E has lost 1,622 pounds of lift since its fielding over 35 years ago due to increased weight and can only carry a 12-troop payload on a standard day. More recently, Marine Corps officials rated the performance of the CH-46E during Operation Iraqi Freedom as satisfactory despite these lift limitations.

[3] In its written comments on a draft of this report, DOD stated that the Navy lists CH-46E safety improvements as an unfunded requirement of $10 million to $14 million based upon the retirement schedule of the CH-46E and the fielding schedule of the MV-22 replacement.

Assault Amphibian Vehicle-Personnel (AAV)

The AAV is an armored, fully-tracked landing vehicle that carries troops in water operations from ship to shore through rough water and surf zone, or to inland objectives ashore. There are 1,057 vehicles in the inventory. The Marine Corps plans to replace the AAV with the Expeditionary Fighting Vehicle (formerly the AAAV—Advanced Amphibious Assault Vehicle).

Figure 23: Assault Amphibian Vehicle-Personnel

Source: Defense Visual Information Center.

Condition

We assessed the condition of the AAV as yellow because of its age and the fact that the Marine Corps plans to upgrade only 680 of the 1,057 AAVs currently in the inventory.[4] Furthermore, the planned upgrade program will only restore the vehicle to its original operating condition rather than

[4] In its written comments on a draft of this report, DOD stated that the Marine Corps plans to upgrade 1,007 vehicles, an additional 327 vehicles, assuming funding is provided. The AAV program received funding for 148 vehicles through the fiscal year 2003 Operation Iraqi Freedom supplemental, a fiscal year 2004 congressional plus-up, and fiscal year 2005 funding. DOD also stated that the Marine Corps plans to address the remaining 179 vehicles in a fiscal year 2006 Program Objective Memorandum initiative to upgrade 90 vehicles in fiscal year 2006 and 89 vehicles in fiscal year 2007.

upgrading it to perform beyond its original operating condition. We could not base our assessment of the condition on readiness rates in relation to the readiness rate goals because the Marine Corps did not provide sufficient trend data. Marine Corps officials at Pacific Command stated that the heavy usage of the AAV during Operation Iraqi Freedom and the long fielding schedule of the replacement vehicle present significant maintenance challenges. However, we assessed the condition yellow instead of red based on favorable comments about the current condition of the AAV from operators and maintainers.

Program Strategy

We assessed the program strategy for the AAV as yellow because the Marine Corps has developed a long-term program strategy for overhauling the AAV; however, the program only restores the vehicle to its original operating condition and does not upgrade the vehicles beyond original condition. The Marine Corps initiated a Reliability, Availability and Maintenance/Rebuild to Standard (RAM/RS) upgrade program in 1998 to restore capabilities and lengthen the expected service life of the AAV to sustain the vehicles until the replacement system, the Expeditionary Fighting Vehicle (formerly the Advanced Amphibious Assault Vehicle), can be fielded. The RAM/RS is expected to extend the AAV service life an additional 10 years.[5] These vehicles will be needed until the replacement vehicles can be fielded in 2012. However, the procurement of the replacement vehicles has reportedly already been delayed by 2 years.

Funding

We assessed the funding for the AAV as yellow because current and projected funding is not consistent with the Marine Corps' requirements to upgrade the AAV inventory. Requested funding rose from $13.5 million in fiscal year 1998 to $84.5 million in fiscal year 1999 as the Marines initiated the RAM/RS program. The requested funding level declined to $66.2 million by fiscal year 2002. The Marine Corps identified a $48.9 million unfunded program in the fiscal year 2004 budget request to extend RAM/RS to more

[5] In its written comments on a draft of this report, DOD officials stated that the RAM/RS program is expected to extend the service life an additional 20 years to the exit date of 2018.

vehicles. Marine Corps officials are concerned reconstitution of the vehicles from Operation Iraqi Freedom will not include funding for vehicles returning from Operation Iraqi Freedom for the RAM/RS program.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability of the AAV, Marine Corps officials indicated that it has successfully fulfilled its wartime missions but with some limitations. While these officials cited the AAV as integral to ground operations during Operation Iraqi Freedom, they noted specific stresses placed on the vehicles. For example, AAVs deployed to Operation Iraqi Freedom traveled, on average, over 1,000 miles each, a majority of those miles under combat conditions. Those conditions added about 5 years worth of miles and wear and tear to the vehicles over a 6- to 8-week period. In addition, prior to Operation Iraqi Freedom, Marine Corps officials at Camp Lejeune highlighted problems they encountered with obtaining enhanced armor kits to protect the vehicles from the .50 caliber ammunition that was used by Iraqi forces. At the time of our review, only 26 of 213 AAVs at Camp Lejeune had been provided the enhanced armor kits. Marine Corps officials at Camp Lejeune believed the lack of kits was due to insufficient funding.

Light Armored Vehicle-Command & Control (LAV-C2)

The LAV-C2 variant is a mobile command station providing field commanders with the communication resources to command and control Light Armored Reconnaissance (LAR) units. It is an all-terrain, all-weather vehicle with night capabilities and can be made fully amphibious within three minutes. There are 50 vehicles in the inventory with an average age of 14 years.

Figure 24: Light Armored Vehicle-Command & Control

Source: Defense Visual Information Center.

Condition

We assessed the condition of the LAV-C2 as green because the Marine Corps has initiated a fleet-wide Service Life Extension Program (SLEP) to extend the service life of the vehicle from 20 years to 27 years. The LAV-C2 SLEP includes enhancements to communications capabilities. Marine Corps officials cautioned that any delays in SLEP could affect future readiness. While we assessed the condition as green, we noted the operational readiness rate for the command and control variant was

90.5 percent, below the 100 percent goal but higher than the operational readiness rate of 85 percent for the entire fleet.

Program Strategy

We assessed the program strategy for the LAV-C2 as green because the Marine Corps has developed a long-term program strategy for upgrading the LAV-C2 inventory. The program funded in the current FYDP will enhance communications capabilities and power systems and may afford commonality with Unit Operation Center and helicopter systems. The Marines Corps intend for the upgraded LAV-C2 to provide a prototype to establish baseline requirements for future capabilities and a successor acquisition strategy. Marine Corps officials stated the C2 upgrade program needs to be supported at all levels.

Funding

We assessed the funding for the LAV-C2 as green because current and projected funding is consistent with Marine Corps stated requirements to upgrade the LAV-C2 inventory. Marine Corps officials have requested $72.2 million in the current FYDP to support major LAV-C2 technology upgrades. Marine Corps officials at Pacific Command recommended increased funding for procurement of additional vehicles, citing the current inventory deficiency as critical.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability of the LAV-C2, Marine Corps officials indicated that it has successfully fulfilled its recent wartime missions. Marine Corps reports regarding the operations in Afghanistan cited LAVs in general as the most capable and dependable mobility platform despite the fact that the number of available C-17 transport aircraft limited the deployment of the vehicles. Initial reports from Operation Iraqi Freedom also indicate that the LAV-C2 performed successfully.

AGM-65E Maverick Missile

The Maverick missile is a precision-guided, air-to-ground missile configured primarily for the anti-tank and anti-ship roles. It is launched from a variety of fixed-wing aircraft and helicopters and there are laser and infrared-guided variants. The Maverick missile was first fielded in 1985.

Figure 25: AGM-65E Maverick Missile

Source: Defense Visual Information Center.

Condition

N/A

We assessed the condition of the Maverick missile as not applicable because the Marine Corps does not track readiness data such as mission capable or operational readiness rates for munitions as they do for aircraft or other equipment.

Program Strategy

We assessed the program strategy for the Maverick missile as green because the Marine Corps has developed a long-term program strategy for replacing the Maverick missile with more capable missiles. Maverick missile procurement ended in 1992 and the infrared variant will no longer

be used in 2003. According to Marine Forces Pacific Command officials, a joint common missile is being developed and scheduled for initial operational capability in 2008. The new missile will be a successor to the Maverick, Hellfire, and TOW missiles. Marine Corps officials stated a joint reactive precision-guided munition for both fixed- and rotary-winged aircraft as a potential successor to Maverick and Hellfire missiles will be submitted to the Joint Requirements Oversight Committee for evaluation in fiscal year 2003.

Funding

We assessed the funding for the Maverick missile as green because current and projected funding is consistent with the Marine Corps' stated requirements to replace the Maverick missile inventory. Since fiscal year 1998, the Marine Corps limited funding for the Maverick to the operation and maintenance accounts.

Wartime Capability

While we did not have sufficient data to definitively assess the wartime capability of the Maverick missile, Marine Corps officials indicated that it has successfully fulfilled its recent wartime missions but with some limitations. Specifically, these officials stated that the Maverick missile lacks an all-weather capability. Marine Corps officials cited increased risks due to sensor limitations of the laser variant that restricts the missile's use to low threat environments. Although the Maverick fulfilled its wartime mission during Operation Iraqi Freedom, Marine Corps officials stressed that its success was due to the fact that this was the optimal environment for the Maverick—desert environment and a lack of low cloud cover. In any other type of environment, however, the Maverick's use is limited.

Comments from the Department of Defense

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ACQUISITION,
TECHNOLOGY
AND LOGISTICS

NOV 2 1 2003

William M. Solis
Director, Defense Capabilities and Management
U.S. General Accounting office
441 G Street, N.W.
Washington, DC 20548

Dear Mr. Solis:

This is the Department of Defense's (DoD) response to the GAO Draft Report, GAO-04-112, "MILITARY READINESS: DoD Needs to Reassess Program Strategy, Funding Priorities, and Risks for Selected Equipment" dated October 16, 2003 (GAO Code 350273).

The DoD partially concurs with one recommendation, and nonconcurs with two recommendations. Specific comments on each recommendation are attached. Comments regarding the assessments made in the appendices are also provided in the attachment.

My action officer for this review is Mr. Stan Azebu, (703) 697-1786, stan.azebu@osd.mil.

We appreciate the opportunity to comment on the draft report.

Sincerely,

Nancy L. Spruill

Nancy L. Spruill
Director, Acquisition
Resources and Analysis

Attachment:
As Stated

GAO DRAFT REPORT – DATED OCTOBER 16, 2003
GAO CODE 350273/GAO-04-112

"MILITARY READINESS: DoD Needs to Reassess Program Strategy, Funding Priorities, and Risks for Selected Equipment"

DEPARTMENT OF DEFENSE COMMENTS TO THE RECOMMENDATIONS

RECOMMENDATION 1: The GAO recommended that the Secretary of Defense, in conjunction with the Secretaries of the Army, Navy, and Air Force, reassess the program strategies for equipment modernization and recapitalization, and reconcile those strategies with the Services' funding requests to ensure that key legacy equipment, especially those items needed to meet the strategy outlined in the September 2001 Quadrennial Defense Review, are sustained until replacement equipment items can be fielded. (pgs. 22-23/GAO Draft Report)

DOD RESPONSE: Partially concur. Through the past Planning, Programming, and Budgeting System (PPBS) and the more current Planning, Programming, Budgeting and Execution (PPBE) processes, the Department had and continues to have an annual procedure to reassess program strategies to ensure equipment maintenance, modernization, and recapitalization funding supports the most recent Defense strategy. The PPBS/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. While the overall strategy outlined in the September 2001 Quadrennial Defense Review may be unchanged, events over time may dictate changes in individual program priorities. This makes an annual reassessment a requirement in order to meet the most current threat.

RECOMMENDATION 2: In reconciling these program strategies to funding requests, the GAO recommended that the Secretary of Defense highlight for the Congress, in conjunction with the Department's Fiscal Year 2005 budget submissions, the risks involved in sustaining key equipment items if adequate funding support is not requested and the steps the Department is taking to address those risks. (p. 23/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 Recommendation 1. The draft report refers to instances where "...projected Department of Defense funding is not consistent with the services' stated requirements to support their program strategies..." It is important to note that a program manager's requirement is not always a valid requirement at the Service level. Likewise, a Service requirement may not be validated at the DoD level. If the requirement is validated, it is resolved at either the Service or OSD level before the next budget is submitted. The

1

PPBE process results in a balanced program designed to accomplish the defense mission within the resources allocated. Therefore, the budget will request resources at an appropriate level for all programs, and all key equipment items will be funded within available resources.

RECOMMENDATION 3: As part of this process, the GAO recommended that the Department identify the key equipment items that, because of impaired conditions and their importance to meeting the Department's military strategies, should be given the highest priority for sustainment, recapitalization, modernization, or replacement. (p. 23/GAO Draft Report)

DOD RESPONSE: Nonconcur. DoD, in developing the annual Defense Budget, has already allocated resources according to its highest priorities. Key equipment items that are vital to accomplishing the Department's mission are allocated funding in order to meet the requirements of the most current defense strategy. There is no need to restate these priorities with a list. The budget documentation provides justification for the funding requests. If key equipment is impaired, that is part of the justification.

DRAFT LETTER TO REPRESENTATIVES SKELTON, MURTHA, AND DICKS: Page 6 identifies the CH-47D, CH-46E, KC-135, EA-6B, Standard Missile-2, and the Tomahawk Missile as systems with problems and issues that warrant action within the next 1 to 3 years.

DOD RESPONSE: Within available resources, the Department has funded these programs at levels considered appropriate, given current and projected mission requirements. The Department will continue to reassess as we go through the resource allocation process.

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**DEPARTMENT OF DEFENSE COMMENTS
ON SPECIFIC SERVICE FINDINGS**

Air Force – KC-135

Appendix II, Page 51, "Program Strategy" GAO Report states: "The Air Force has embarked on a controversial, expensive program to replace the tanker fleet, but has not demonstrated the urgency of acquiring replacement aircraft, and has not defined the requirements for the number of aircraft that will be needed. Neither has the Air Force analyzed alternatives, such as retiring without replacing the E models that appear to be the center of its concerns.

Air Force Response: The GAO report does not reflect the latest information produced by the Air Force. The KC-135E Business Case Analysis (BCA), which came out in May of 2003, details the problems with the E-models and why it is imperative that the AF begin replacing this 43 year-old weapon system. The USAF realized that, historically, based on the projected 2004 rates, the annual KC-135 depot price per aircraft grew by 18% compounded annually since 1991, and fleet availability decreased by 1% per year. The combination of increasing costs and decreasing availability in the future compels the USAF to act now to balance cost, capability, risk, and recapitalization of the KC-135 fleet.

The TRS-05 (which is classified) does indeed give guidance regarding how many tankers are needed to support projected operations, this number is a range but it is based on historical data and forecast requirements.

GAO Report states: "The Air Force has a large fleet of KC-135s (about 545), which were flown about 300 hours annually between 1995 and September 2001. Since then utilization is about 435 hours per year, and has a shortage of aircrews to fly the aircraft it has. In Operation Iraqi Freedom, a relatively small part of the fleet was used to support the conflict (149 aircraft)."

Air Force Response: The study states that only 149 aircraft were required for Iraqi Freedom. They do not take into account the large number of aircraft committed to other requirements; Homeland Defense, Afghanistan, AEF, Airbridge etc.

Appendix II, Page 51, "Funding". GAO Report States: "The Air Force has not addressed recapitalization funding in the current budget or in the Future Years Defense Plan. The Air Force plans to begin acquiring new aircraft almost immediately, but doesn't want to divert funding from other programs to pay for them. The Air Force proposed a unique leasing arrangement with Boeing that will provide new tankers as early as 2006. There remains controversy over the lease terms, aircraft pricing, and how the lease will be paid for.

Air Force Response: Funding for tanker recapitalization was included in the FY03 APOM; originally, funding would only have delivered one aircraft by the end of FY09. The lease proposal utilizes the previously identified procurement funding and rearranges other Air Force programs to deliver 60 aircraft in the same timeframe. The KC-767A proposal is only the first step in a comprehensive, long-term tanker recapitalization plan that is currently under revision.

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Marine Corps – Assault Amphibian Vehicle

Appendix II, Page 74, "Condition". The GAO Report states: "We assessed the condition of the AAV as yellow because of its age and the fact that the Marine Corps plans to upgrade only 680 of the 1,057 AAVs currently in the inventory. Furthermore, the planned upgrade program will only restore the vehicle to its original operating condition rather than upgrading it to perform beyond its original operating condition."

Marine Corps Comments: The Reliability, Availability, Maintainability / Rebuild-to-Standard (RAM/RS) program is intended to restore the vehicle to original specifications and addresses three of the top five cost drivers associated with supporting the aging fleet of vehicles. Initially the office of the Program Manager for Assault Amphibious Vehicle Systems (PM AAVS) planned to upgrade only 680 vehicles out of the 1,057 vehicle Approved Acquisition Objective (AAO). However, the Marine Requirements Oversight Council recommended that the RAM/RS production remain open beyond the planned completion of FY2003 based upon RAM/RS performance in Operation Iraqi Freedom (OIF) and OIF reconstitution decisions. PM AAVS now plans to upgrade a total of 1,007 vehicles to RAM/RS configuration assuming funding is provided.

As a result of the wear and tear from OIF, short-term readiness challenges exist. It is expected that readiness will gradually improve over the coming months and should greatly improve once fielding of RAM/RS vehicles above the initial 680 resumes in October 2004. Additionally, PM AAVS has an $11M/year Modification Kits line that addresses vehicle modifications to meet emergent requirements and potentially addresses readiness issues.

Appendix II, Page 74, "Program Strategy". The GAO Report states: The Marine Corps initiated a RAM/RS upgrade program in 1998 to restore capabilities and lengthen the expected service life of the AAV to sustain the vehicles until the replacement system, the Expeditionary Fighting Vehicle, can be fielded. The RAM/RS is expected to extend the AAV service life an additional 10 years. These vehicles will be needed until the replacement vehicles can be fielded in 2012. However, the procurement of the replacement vehicles has already been delayed by 2 years."

Marine Corps Comments: The RAM/RS program is intended to address top fleet cost drivers for the AAV and to restore the vehicle to its original specifications. The RAM/RS program is expected to extend the service life an additional 20 years to the exit date of 2018, which coincides with EFV Full Operational Capability (FOC). The program strategy for support to the AAV Family of Vehicles (FOV) also includes utilizing the funding in the Mod Kit line to address emerging requirements with engineering changes and modifications. Additionally, PM AAVS is exploring potential capability improvements to the AAV in the event Marine Corps decisions result in an extension of the vehicle service life.

Appendix II, Page 74, "Funding". The GAO Report states, "We assessed the funding for the AAV as yellow because current and projected funding is not consistent with the Marine Corps' stated requirements to upgrade the AAV inventory."

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Marine Corps Comments: It is not clear what is meant by "the Marine Corps' stated requirement to upgrade the AAV inventory". As part of the approval of the RAM/RS program as an acquisition program, it was determined that the AAO for RAM/RS should be 1,057 vehicles instead of the 1,322 vehicles in the inventory at that time. The Marine Corps decided to limit the approved procurement quantity to 680 vehicles, which left the 327 vehicles on MPF and 50 other General Support vehicles in non-RAM/RS configuration. The RAM/RS program was fully funded for 680 vehicles. The funding level decreased from FY1999-FY2002 because of the expected learning curve in the production process. Cost increases resulted in the program being extended an additional year such that PM AAVS was funded $53.9M in FY2003 to upgrade 85 vehicles to complete the original 680.

During PR05, PM AAVS received $49.9M for the upgrade of 60 vehicles in FY2005. OIF supplemental funding (FY2003) provided $56.9M for RAM/RS upgrades and restoration of war-damaged vehicles. Of the $56.9M, PM AAVS plans to upgrade 60 vehicles in FY2004. Finally, a $14.25M FY2004 Congressional Plus-up was authorized for PM AAVS to upgrade an additional 28 vehicles in FY2004. The total number of vehicles funded with FY2003 (supplemental), FY2004, and FY2005 funding is 148. The remaining 179 vehicles of the 327 to reach 1,007 RAM/RS will be addressed in constructing the President's FY 2006 budget.

Appendix II, Page 75, "Wartime Capability".

Marine Corps Comments: The lack of Enhanced Appliqué Armor Kits (EAAK) during OIF was not a result of insufficient procurement funding for PM AAVS. EAAK was originally procured in 1992 to outfit every vehicle. Over the years EAAK sets have been washed out due to attrition without replenishment. In 1998, the EAAK was designated as a Special Mission Kit to be mounted at the discretion of commanders. The priority for EAAK has been for all vehicles in the forward deployed pre-positioned forces and the deploying Marine Expeditionary Units (MEUs).

During OIF, all the pre-positioned AAVs from the MPF ships and all the MEU AAVs had EAAK mounted. Of the approximately 600 AAVs deployed in OIF, about half had EAAK mounted. Currently, the PM AAVS is procuring additional sets of EAAK with the goal to have EAAK available for every AAV in the operating forces. This procurement started prior to OIF and will continue through FY2006/2007.

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Navy - MV-22:

Page 16, Paragraph 2: The MV-22 is scheduled to replace both the Marine Corps CH-46 and CH-53D aircraft, not just the CH-46's.

SPECIFIC COMMENTS:

Page 16, paragraph 2, "DOD has also cut the number of replacement aircraft it plans to purchase by 8 to 10 per year, . . ."

Navy Comment: This statement is not accurate. The V-22 Program of Record production rates begin to increase in FY06. The following applies: FY06 - 17, FY08 - 26, FY09 - 39, and FY10 (and out) - 48.

Navy – Tomahawk Cruise Missile:

Appendix II, Page 69, General Comments Regarding Tomahawk.

Navy Comment: The overarching theme of the Tomahawk section of this report concerns Tomahawk inventory and the number of missiles required to fulfill the combatant commanders needs. OPNAV has the primary responsibility to determine this requirement, based on input from the combatant commanders, target sets, war plans, and available budget and acquisition strategy.

The Tomahawk program strategy is structured to provide the fleet with sufficient numbers of Tomahawk missiles to meet their requirements by:

1. Completing the existing remanufactured missile program.
2. IOC Block IV (Tactical Tomahawk) and accelerate Block IV deliveries to the maximum extent possible.
3. Maximize RFI inventory of currently fielded Block III missiles.

Specific Comments:

Appendix II, Page 69, paragraph 3: "During Operation Iraqi Freedom, 788 Tomahawks were expended with a remaining inventory of 1,474. The replenishment missiles are all programmed to be the new Tactical Tomahawk missile. Even when funding is appropriated and executed this fiscal year, the first available date for new missiles entering the inventory will be late 2005-2006."

Navy Comments: The Program office does not concur with the program strategy assessment as "Red". This paragraph should read:

"We assessed the program strategy for the Tomahawk Cruise Missile as yellow because the Navy has developed a long-term program strategy for upgrading the Tomahawk Cruise Missile inventory; however, the future inventory level will not be determined until funding

questions are resolved. During Operation Iraqi Freedom, 789 Tomahawks were expended with a remaining inventory of 1474. A second of two remanufacturing programs was funded in FY2002 to upgrade the capabilities on 454 older missiles to Block III capability. Two-hundred nineteen (219) remanufactured missiles have been delivered as of 01 October 2003, 178 of which were delivered ahead of contract schedule. Two-hundred thirty-five (235) missiles remain to be delivered under the current remanufacture contract and are scheduled to complete by CY2004. Additional replenishment missiles are all programmed to be the new Tactical Tomahawk missile. Tactical Tomahawk entered into Low Rate Initial Production (LRIP) in FY2002, with 192 missiles currently on production contract. The Tactical Tomahawk Program has completed TECHEVAL, with eight successful test shots in eight attempts. OPEVAL is currently scheduled to begin in December 2003. Tactical Tomahawk is on schedule to realize initial operational capability (IOC) in May 2004. The Program Strategy is sound and consistent with the dynamic nature of the use of the weapon – use of all available appropriated funds to replenish inventory in the shortest possible time to meet the needs of the combatant commanders."

Please note: 789 Tomahawks were expended by the United States Navy; current inventory is 1474 Block III missiles; and the follow-on Tactical Tomahawk (TACTOM) is scheduled to enter the inventory in 2004.

Additionally, the "Program Strategy" paragraph is missing several facts:

- Remanufacture programs, 1,078 missiles, deliveries through CY2004.
- Block IV LRIP I and II on contract, 192 missiles (FY02 – 03 funds), deliveries May 04 through Aug 05.
- Block IV LRIP III, in negotiations, est 183 missiles (IFF supplemental funds), deliveries starting FY2005.
- Block IV FRP, in negotiations, est 1,903 missiles (FY04 – 08 funds), deliveries starting FY2005.

Appendix II, Page 69, "Funding".

Navy Comments: The Program Office does not concur with the funding assessment as "Red". The paragraph should read, "We assessed the funding for the Tomahawk Cruise Missile as yellow because current and projected funding is not consistent with the Navy's stated requirements to replenish the inventory. The Congress provided an additional $217M of FY2003 supplemental funding in August 2003 to procure 183 missiles and increase production capacity. The Congress provided additional funding above the budget request for FY2004 to increase production quantity, and multi-year procurement authority as requested by the Navy to ensure production for the next five years."

Appendix II, Page 69, paragraph 4: "Improved Tomahawks came into the inventory in 1994 and provided enhanced accuracy on targets."

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Navy Comments: This paragraph should state, "Improved Tomahawks came into the inventory in 1993 and provided enhanced accuracy on targets."

Navy – CH-46E Sea Knight Helicopter.:

Appendix II, Page 72, "Wartime Capability": "The Navy lists CH-46E safety improvement kits as a $ 4 million unfunded requirement."

Navy Comments: Recommend changing the sentence to read, "At present the Navy lists CH-46E safety improvements as an unfunded requirement of $10-14M based upon the retirement schedule of the CH-46E and fielding schedule of the MV-22."

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GAO Contact and Staff Acknowledgments

GAO Contact

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Acknowledgments

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