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Report to the Chairman, Subcommittee on Tactical Air and Land Forces, Committee on Armed Services, House of Representatives

March 2004

FORCE STRUCTURE

Improved Strategic Planning Can Enhance DOD's Unmanned Aerial Vehicles Efforts

GAO-04-342

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GAO Accountability • Integrity • Reliability

Highlights

Highlights of GAO-04-342, a report to the Chairman, Subcommittee on Tactical Air and Land Forces, House Committee on Armed Services

Why GAO Did This Study

The current generation of unmanned aerial vehicles (UAVs) has been under development for defense applications since the 1980s. UAVs were used in Afghanistan and Iraq in 2002 and 2003 to observe, track, target, and strike enemy forces. These successes have heightened interest in UAVs within the Department of Defense (DOD) and the services.

GAO was asked to (1) determine how much funding DOD requested, was appropriated, and was obligated for major UAV development efforts during fiscal years 1999-2003 and (2) assess whether DOD's approach to planning for UAVs provides reasonable assurance that its investment in UAVs will facilitate their integration into the force structure.

What GAO Recommends

GAO recommends that DOD (1) establish a strategic plan to guide UAV development and fielding and (2) designate the UAV Task Force or other appropriate body to oversee the plan's implementation, ensuring that sufficient authority is provided. DOD partially concurred with one recommendation and disagreed with the other, saying it did not need to provide more authority for an organization within the department. GAO continues to support both recommendations because of growth in the number and cost of UAV programs and their importance to military capabilities.

www.gao.gov/cgi-bin/getrpt?GAO-04-342.

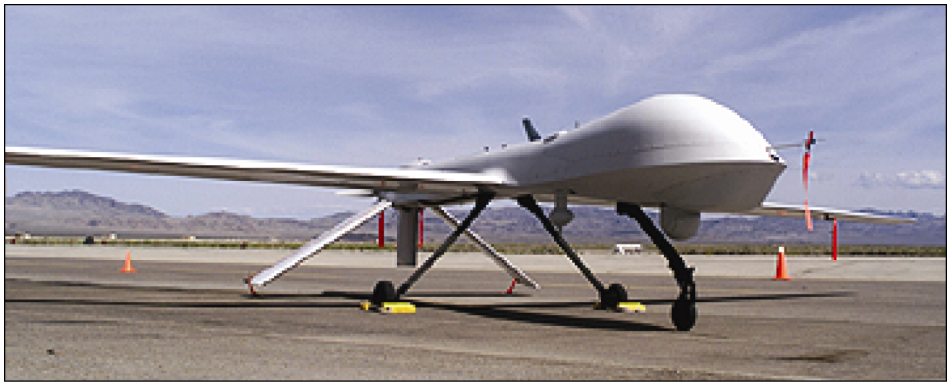
To view the full product, including the scope and methodology, click on the link above. For more information, contact Neal P. Curtin (202) 512-4914 or curtinn@gao.gov.

What GAO Found

During the past 5 fiscal years, Congress provided more funding for UAV development and procurement than requested by DOD, and to date the services have obligated most of these funds. To promote rapid employment of UAVs, Congress has provided nearly $2.7 billion for UAV development and procurement compared with the $2.3 billion requested by DOD. Because Congress has appropriated more funds than requested, the services are able to acquire systems at a greater rate than planned. For example, in fiscal year 2003, the Air Force requested $23 million to buy 7 Predator UAVs, but Congress provided over $131 million—enough to buy 29 Predators.

DOD's approach to planning for developing and fielding UAVs does not provide reasonable assurance that its investment in UAVs will facilitate their integration into the force structure efficiently, although DOD has taken positive steps to improve the UAV program's management. In 2001 DOD established a joint Planning Task Force in the Office of the Secretary of Defense. To communicate its vision and promote commonality of UAV systems, in 2002, the Task Force published the *UAV Roadmap*, which describes current programs, identifies potential missions, and provides guidance on emerging technologies. While the *Roadmap* identifies guidance and priority goals for UAV development, neither it nor other key documents represent a comprehensive strategic plan to ensure that the services and DOD agencies develop systems that complement each other, perform all required missions, and avoid duplication. Moreover, the Task Force serves in an advisory capacity to the Under Secretary of Defense for Acquisition, Technology, and Logistics, but has little authority to enforce program direction. Service officials indicated that their service-specific planning documents were developed to meet their own needs and operational concepts without considering those of other services. Without a strategic plan and an oversight body with sufficient authority to enforce program direction, DOD risks fielding a poorly integrated UAV force structure, which could increase costs and the risk of future interoperability problems.

The Air Force Predator UAV



Source: U.S. Air Force.

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Abbreviations

DOD	Department of Defense
GAO	General Accounting Office
UAV	unmanned aerial vehicle

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United States General Accounting Office
Washington, DC 20548

March 17, 2004

The Honorable Curt Weldon
Chairman
Subcommittee on Tactical Air
and Land Forces
Committee on Armed Services
House of Representatives

Dear Mr. Chairman:

The current generation of unmanned aerial vehicles (UAVs) has been under development for defense applications since the 1980s. UAVs won considerable acceptance during military operations in Afghanistan and Iraq in 2002 and 2003. They were used in these operations to observe, track, target, and in some cases strike enemy forces. These and similar successes have heightened interest in UAVs within the Department of Defense (DOD) and the services. In fact, by 2010, DOD plans to have at least 14 different UAVs in the force structure to perform a variety of missions.

Given the evolution of UAVs to an operational status, you asked us to review DOD's overall planning effort to establish, maintain, and operate UAVs. As agreed with your office, we (1) analyzed the extent to which DOD requested, was appropriated and was obligated funds for major UAV development efforts during fiscal years 1999-2003 and (2) assessed whether DOD's approach to planning for UAVs provides reasonable assurance that its investment in UAVs will facilitate their integration into the force structure.

To address these objectives, we obtained and analyzed DOD documentation from fiscal year 1999 to fiscal year 2003 for UAV-related procurement and research, development, test, and evaluation funding. We obtained and examined key departmentwide strategic documents—including the Office of the Secretary of Defense's 2002 UAV *Roadmap*[1]—to identify the level of DOD's strategic planning for UAVs across the

[1]U.S. Department of Defense, *Unmanned Aerial Vehicles Roadmap, 2002-2027* (Washington, D.C.: December 2002).

department. Additionally, we met with key Office of the Secretary of Defense activities and the Joint Staff, as well as key service organizations involved in developing UAV force structure planning documents. Further information on our scope and methodology appears in appendix I.

We performed our work from June 2003 to February 2004 in accordance with generally accepted government auditing standards.

Results in Brief

During the past 5 fiscal years, Congress provided funding for UAV development and procurement that exceeds the amounts requested by DOD, and to date the services have obligated about 99 percent of these funds. To promote rapid employment of UAVs, Congress appropriated nearly $2.7 billion to develop and acquire UAVs from fiscal year 1999 through fiscal year 2003 compared with the $2.3 billion requested by DOD. The majority of the funds—$1.8 billion (67 percent)—have been for UAV research, development, test and evaluation. Only three systems over these 5 years—the Air Force's Predator and Global Hawk, and the Army's Shadow—have matured to the point that they required procurement funding, amounting to about $880 million by fiscal year 2003 and another estimated $938 million needed by fiscal year 2005. Because Congress has appropriated more funds than requested, the services are able to acquire systems at a greater rate than planned. For example, in fiscal year 2003, the Air Force requested $23 million to buy 7 Predator UAVs, but Congress provided over $131 million—enough to buy 29 Predators. The Air Force has obligated 71 percent of the Predator's fiscal year 2003 funding during its first program year.

DOD's approach to planning for developing and fielding UAVs does not provide reasonable assurance that its investment in UAVs will facilitate their integration into the force structure efficiently, although DOD has taken certain positive steps to improve the UAV program's management. To help manage UAV development, in 2001 DOD established the joint Planning Task Force in the Office of the Secretary of Defense to promote a common vision for UAV-related efforts and to establish interoperability standards. To communicate its vision and promote UAV interoperability, the Task Force issued the 2002 UAV *Roadmap*, which describes current programs, identifies potential missions for UAVs, and provides guidance on developing emerging technologies. While DOD's *Roadmap* provides strategic guidance for the development of UAV technology and suggests priority goals for developing the technology, neither the *Roadmap* nor other defense planning documents represent a comprehensive strategic plan to ensure that the services and other DOD agencies focus

development efforts on systems that complement each other, will perform the range of priority missions needed, and avoid duplication. Consequently, officials from each of the services indicated that service-specific UAV roadmaps that were recently developed primarily address the services' requirements and operational concepts without the benefit of a departmentwide UAV strategic plan. Moreover, the Task Force does not have program directive authority and serves only in an advisory capacity to the Under Secretary of Defense for Acquisitions, Technology, and Logistics. As such, the Task Force cannot compel the services to adopt any of its suggestions. Without a strategic plan and an oversight body with sufficient authority to implement the plan, DOD has little assurance that its investment in UAVs will be effectively integrated into the force structure. Consequently, DOD risks poorly integrating UAVs into the force structure, which could increase development, procurement, and logistics costs, and increase the risk of future interoperability problems.

To enhance management control over the UAV program, we are recommending that the Secretary of Defense establish a strategic plan by modifying the *Roadmap* or developing another document to guide UAV development and fielding, and designate the UAV Task Force or another appropriate organization to oversee the strategic plan's implementation, providing it with sufficient authority to effectively enforce the plan's direction, and promote joint operations and efficient expenditure of funds. DOD partially concurred with the first recommendation and disagreed with the second, saying it did not need to provide more authority to an organization within the department. We continue to support both recommendations, however, because we believe the growth in number and cost of UAV programs, and their importance to military capabilities, will need more centralized oversight by DOD.

Background

DOD defines a UAV as a powered aerial vehicle that does not carry a human operator; can be land-, air-, or ship-launched; uses aerodynamic forces to provide lift; can be autonomously or remotely piloted; can be expendable or recoverable; and can carry a lethal or nonlethal payload. Generally, UAVs consist of the aerial vehicle, a flight control station, information and retrieval or processing stations, and sometimes wheeled land vehicles that carry launch and recovery platforms.

Evolution of UAV Development and Use

UAVs have been used in a variety of forms and for a variety of missions for many years. After the Soviet Union shot down a U-2 spy plane in 1960, certain UAVs were developed to monitor Soviet and Chinese nuclear

testing. Israel used UAVs to locate Syrian radars and was able to destroy the Syrian air defense system in Lebanon in 1982. The United States has used UAVs in the Persian Gulf War, Bosnia, Operation Enduring Freedom, and Operation Iraqi Freedom for intelligence, surveillance, and reconnaissance missions and to attack a vehicle carrying suspected terrorists in Yemen in 2002. The United States is also considering using UAVs to assist with border security for homeland security or homeland defense.

Battlefield commanders' need for real time intelligence has been a key reason for the renewed interest in UAVs. According to the Congressional Research Service, UAVs are relatively lightweight and often difficult to detect. Additional advantages include longer operational presence, greater operations and/or procurement cost-effectiveness, and no risk of loss of life of U.S. service members.[2]

DOD operates three UAV types—small, tactical, and medium altitude endurance—in its force structure. The Air Force has operated the MQ-1 Predator since 1996 in intelligence, surveillance, and reconnaissance missions, using a variety of sensors and satellite data links to relay information, and in an offensive combat role using Hellfire missiles. The Air Force also operates a small UAV called Desert Hawk, a 5-pound aerial surveillance system used by security personnel to improve situational awareness for force protection. The Army, Navy, and Marine Corps have at various times operated the RQ-2 Pioneer since 1986. Only operated by the Marine Corps today, the Pioneer provides targeting, intelligence, and surveillance. The Marine Corps also operates a small UAV called Dragon Eye for over-the-hill reconnaissance. This small, 4.5-pound UAV is currently in full-rate production. Originally envisioned to be a joint Army/Navy/Marine Corps program, the RQ-5 Hunter was cancelled in 1996 after low-rate initial production. The Army currently operates the residual Hunters for intelligence, surveillance, and reconnaissance. The Army also has selected the RQ-7 Shadow to provide intelligence, surveillance, and reconnaissance at the brigade level, and full-rate production was approved in 2002. Another system, the Raven, a small, 4-pound UAV is being purchased commercially off the shelf by both the Army for regular unit support and the Air Force for special operations. Numerous other UAVs of various sizes remain in development. These include the RQ-4 Global

[2]Congressional Research Service, *Military Unmanned Aerial Vehicles (UAVs)*, 96-75F (Washington, D.C.: Aug. 13, 1998).

Hawk, a nearly 27,000-pound, jet-powered UAV with a wing span of over 116 feet used for intelligence, surveillance, and reconnaissance over an area of up to 40,000 square nautical miles per day; the RQ-8 Fire Scout, a vertical takeoff and landing UAV weighing nearly 2,700 pounds; and the Neptune, weighing under 100 pounds with a wingspan of 7 feet and optimized for sea-based operations.

In addition, congressional action in recent years has been directed toward promoting an increase in the number and type of missions on which UAVs can be used. For example, section 220 of the Department of Defense Authorization Act for Fiscal Year 2001 specifies that it shall be a goal of the armed forces that one-third of the aircraft in the operational deep strike aircraft fleet be unmanned by 2010. Moreover, in section 1034 of the National Defense Authorization Act for fiscal year 2004, Congress mandated a DOD report of the potential for UAVs to be used for a variety of homeland security and counter drug missions.[3] Finally, the fiscal year 2004 Defense Appropriations Conference Report[4] directs that DOD prepare a second report by April 2004 detailing UAV requirements that are common to each of the uniformed services.

Prior GAO Review of UAV Development

Most of our prior work has focused on the development, testing, and evaluation of unmanned aerial vehicles. As recently as September 2000, we reported that DOD was deciding to procure certain UAV systems before adequate testing had been completed.[5] We found that buying systems before successfully completing their testing had led repeatedly to defective systems that were later terminated or required costly retrofits or redesigns to achieve satisfactory performance. Conversely, when DOD focused UAV acquisition on mature technologies that proved the military utility of a given vehicle, the department had an informed knowledge base upon which to base a decision. For example, even though the Predator UAV was based on the existing Gnat 750 UAV, the department required

[3]The act also mandated that the Secretary of Defense conduct a study of future naval platform architecture, including the potential for unmanned ships in the future.

[4]H.R. Conf. Rep. No. 108-283 at 291 (2003).

[5]U.S. General Accounting Office, *Unmanned Aerial Vehicles: Questionable Basis for Revisions to Shadow 200 Acquisition Strategy*, GAO/NSIAD-00-204 (Washington, D.C.: Sept. 26, 2000).

Predator's performance to be validated.[6] As a result, Predator moved quickly to full-rate production and, at the time of our current review, had performed a variety of operational missions successfully.

Through our prior work, we have also periodically raised the question of the potential for duplication of efforts among the services and the effectiveness of overarching strategy documents and management approaches to avoid duplication and other problems. For example, in June 2003 we reported that the Air Force and Navy, which previously were independently developing unmanned combat aerial vehicles, had agreed to jointly develop a new system for offensive combat missions that met both of their needs.[7] However, we also pointed out that while one program is more efficient than two, the participation of two services would increase the challenges of sustaining funding and managing requirements. Similarly, as early as 1988, we raised concerns about a variety of management challenges related to UAV development.[8] At that time, various congressional committees had expressed concern about duplication in the services' UAV programs and stressed the need to acquire UAVs that could meet the requirements of more than one service, as the Air Force and Navy have recently agreed to try. In response to congressional direction, DOD developed a UAV master plan, which we reviewed at that time. We identified a number of weaknesses in the 1988 master plan, including that it (1) did not eliminate duplication, (2) continued to permit the proliferation of single-service programs, (3) did not adequately consider cost savings potential from manned and unmanned aircraft trade-offs, and (4) did not adequately emphasize the importance of common payloads among different UAV platforms. DOD generally concurred with that report and noted that it would take until 1990 to reconcile service requirements for acquiring a common family of UAVs.

Since our 1988 report, the overall management of defense UAV programs has gone full circle. In 1989 the DOD Director of Defense Research and

[6]U.S. General Accounting Office, *Unmanned Aerial Vehicles: DOD's Demonstration Approach Has Improved Project Outcomes*, GAO/NSIAD-99-33 (Washington, D.C.: Aug. 30, 1999).

[7]U.S. General Accounting Office, *Defense Acquisitions: Matching Resources with Requirements Is Key to the Unmanned Combat Air Vehicle Program's Success*, GAO-03-598 (Washington, D.C.: June 30, 2003).

[8]U.S. General Accounting Office, *Unmanned Vehicles: Assessment of DOD's Unmanned Aerial Vehicle Master Plan*, GAO/NSIAD-89-41BR (Washington, D.C.: Dec. 9, 1988).

Engineering set up the UAV Joint Project Office as a single DOD organization with management responsibility for UAV programs. With the Navy as the Executive Agency, within 4 years the Joint Project Office came under criticism for a lack of progress. Replacing the office in 1993, the Defense Airborne Reconnaissance Office was created as the primary management oversight and coordination office for all departmentwide manned and unmanned reconnaissance. In 1998, however, this office also came under criticism for its management approach and slow progress in fielding UAVs. In that same year, this office was dissolved and UAV program development and acquisition management were given to the services, while the Assistant Secretary of Defense for Command, Control, Communications and Intelligence was assigned to provide oversight for the Secretary of Defense.

Congressional Funding for UAVs Has Met or Exceeded DOD's Requests

Overall, Congress has provided funding for UAV development and procurement that exceeds the amounts requested by DOD during the past 5 fiscal years, and the services to date have obligated about 99 percent of these funds. From fiscal year 1999 through fiscal year 2003, DOD requested approximately $2.3 billion, and Congress, in its efforts to encourage rapid employment of UAVs by the military services, has appropriated nearly $2.7 billion to develop and acquire UAVs. In total, the services have obligated $2.6 billion of the appropriated funds. (See table 1.)

Table 1: UAV Funding Requests, Appropriations, and Obligations, Fiscal Years 1999-2003

Dollars in millions			
Fiscal year	**Presidential budget**	**Appropriated**	**Obligated**
1999	$413.2	$429.4	$397.1
2000	228.3	257.4	256.5
2001	333.9	377.0	396.1
2002	506.3	510.8	613.4
2003	778.7	1,079.0	956.2
Total	**$2,260.5**	**$2,653.6**	**$2,619.2**

Source: DOD.

Notes: The Presidential budget column represents funds requested by DOD. The Appropriated column includes only these funds appropriated in that fiscal year resulting from the budget request; it does not include reprogramming, rescissions, and transfers to total obligation authority. The Obligated column includes all funds the services and DOD have reported as obligated against total obligation authority. We did not attempt to reconcile the difference between appropriated and total obligation authority.

Columns may not total because of rounding.

Generally, the additional funding provided by Congress was targeted for specific programs and purposes, enabling the services to acquire systems at a greater rate than originally planned. For example, in fiscal year 2003 the Air Force requested $23 million to acquire 7 Predators, but Congress provided over $131 million—an increase of approximately 470 percent—enough to acquire 29 Predators to meet operational demands in the war against terrorism. The Air Force has obligated 71 percent of the Predator 2003 funding during its first program year.

About $1.8 billion (67 percent) of the money appropriated during the fiscal year 1999-2003 period went for research, development, test and evaluation of the various models, as shown in table 2.

Table 2: UAV Research, Development, Test and Evaluation Funding Requests, Appropriations, and Obligations, Fiscal Years 1999-2003

Dollars in millions

Fiscal year	Presidential Budget	Appropriated	Obligated
1999	$ 298.7	$ 299.7	$ 285.4
2000	144.4	199.4	198.6
2001	251.7	284.7	297.9
2002	294.8	309.3	315.5
2003	574.0	683.8	614.1
Total	**$ 1,563.6**	**$ 1,776.8**	**$ 1,711.5**

Source: DOD.

Notes: The Presidential budget column represents funds requested by DOD. The Appropriated column includes only those funds appropriated in that fiscal year resulting from the budget request; it does not include reprogramming, rescissions, and transfers to total obligation authority. The Obligated column includes all funds the services and DOD have reported as obligated against total obligation authority. We did not attempt to reconcile the difference between appropriated and total obligation authority.

Columns may not total because of rounding.

The programs were generally divided into efforts to develop tactical UAVs and medium-to-high-altitude endurance UAVs and, until 2002 when the Predator was armed, were focused on meeting surveillance and reconnaissance needs. Only three systems—the Army's Shadow and the Air Force's Predator and Global Hawk—have matured to the point where they required procurement funding during fiscal years 1999 through 2003. By fiscal year 2003, appropriations totaled nearly $880 million, as shown in table 3.

Table 3: UAV Procurement Funding Requests, Appropriations, and Obligations, Fiscal Years 1999-2003

Dollars in millions			
Fiscal year	**Presidential Budget**	**Appropriated**	**Obligated**
1999	$ 114.5	$ 129.8	$ 111.7
2000	83.9	58.0	57.9
2001	82.3	92.3	98.2
2002	211.5	201.5	297.9
2003	204.7	395.2	342.1
Total	**$ 696.9**	**$ 876.8**	**$ 907.8**

Source: DOD.

Notes: The Presidential budget column represents funds requested by DOD. The Appropriated column includes only those funds appropriated in that fiscal year resulting from the budget request; it does not include reprogramming, rescissions, and transfers to total obligation authority. The Obligated column includes all funds the services and DOD have reported as obligated against total obligation authority. We did not attempt to reconcile the difference between appropriated and total obligation authority.

Funding obligations exceed appropriations as a result of reprogramming and other financial actions during the 3 years allowed for the use of procurement money.

Columns may not total because of rounding.

DOD estimates that an additional $938 million in procurement funding will be needed through fiscal year 2005.

DOD Lacks Assurance That Its Planning Will Efficiently Integrate UAVs into the Force Structure

DOD's planning for developing and fielding UAVs does not provide reasonable assurance that UAVs will be integrated into the force structure efficiently, although the department has taken certain positive steps to improve its management of the UAV program. Specifically, DOD created a joint UAV Planning Task Force and developed a key planning document, the UAV *Roadmap 2002-2027*. However, neither the Joint Task Force nor the *Roadmap* is sufficient to provide DOD with reasonable assurance that it is efficiently integrating UAVs into the force structure. Consequently, the individual services are developing their own UAVs without departmentwide guidance, thus increasing the risk of unnecessarily duplicating capabilities and leading to potentially higher costs and greater interoperability challenges.

DOD Has Taken Positive Steps to Improve Program Management

Since 2000 DOD has taken positive steps to improve the management of the UAV program. In October 2001 the Under Secretary of Defense for Acquisition, Technology, and Logistics created the joint UAV Planning Task Force to function as the joint advocate for developing and fielding

UAVs. The Task Force is the focal point to coordinate UAV efforts throughout DOD, helping to create a common vision for future UAV-related activities and to establish interoperability standards. For example, the Task Force is charged with developing and coordinating detailed UAV development plans, recommending priorities for development and procurement efforts, and providing the services and defense agencies with implementing guidance for common UAV programs.

Moreover, the development of the 2002 *Roadmap* has been the Task Force's primary product to communicate its vision and promote UAV interoperability. The *Roadmap* is designed to guide U.S. military planning for UAV development from 2002 to 2027 and describes current programs, identifies potential missions for UAVs, and provides guidance on developing emerging technologies. The *Roadmap* is also intended to assist DOD decision makers in building a long-range strategy for UAV development and acquisition to support defense plans contained in such future planning efforts as the Quadrennial Defense Review.

Current Efforts Do Not Provide Reasonable Assurance for Efficiently Integrating UAVs into the Force Structure

While the creation of the joint Task Force and the UAV *Roadmap* are important steps to improve management of the UAV program, they are not enough to provide reasonable assurance that DOD is developing and fielding UAVs efficiently. The UAV *Roadmap* does not constitute a comprehensive strategic plan for developing and integrating UAVs into force structure. Moreover, the Joint Task Force's authority is generally limited to program review and advice but is insufficient to enforce program direction.

DOD Lacks a Comprehensive Strategic Plan for Developing and Fielding UAVs

While DOD has some elements of a UAV strategic-planning approach in place, it has not established a comprehensive strategic plan or set of plans for developing and fielding UAVs across DOD. The Government Performance and Results Act of 1993 provides a framework for establishing strategic-planning and performance measurement in the federal government, and for ensuring that federal programs with the same or similar goals are closely coordinated and mutually reinforcing. The strategic planning requirement of this framework consists of six key components, described in table 4.

Table 4: Framework for Strategic Planning

Key components
Mission statement—explains why the program exists and what it does. Reflects statutory basis, if applicable.
Long-term goals and objectives—typically general in nature and lays out what the agency wants to accomplish in the next 5 years. Should be expressed in a manner that allows for future assessment of whether they are being achieved.
Approaches (strategies)—general methods the agency plans to use to accomplish long-term goals.
Relationship between long-term goals and objectives and annual performance goals—explains how annual goals will be used to measure progress toward achieving the long-term goals.
External factors—factors external to the agency or program and beyond its control that may significantly affect the agency's ability to accomplish goals.
Program evaluations—a description of how program evaluations were used to establish or revise strategic goals.

Source: U.S. General Accounting Office, *Agency Strategic Plans under GPRA: Key Questions to Facilitate Congressional Review*, GAO/GGD-10.1.16 (Washington, D.C.: May 1997).

When applied collectively and combined with effective leadership, the components can provide a management framework to guide major programs, efforts, and activities, including the development and integration of UAVs into the force structure.

However, neither the UAV *Roadmap* nor other DOD guidance documents represent a comprehensive strategy to guide the development and fielding of UAVs that complement each other, perform the range of priority missions needed, and avoid duplication. DOD officials acknowledged that the Office of the Secretary of Defense has not issued any guidance that establishes an overall strategy for UAVs in DOD. While high-level DOD strategic-planning documents provide some general encouragement to pursue transformational technologies, including the development of UAVs, these documents do not provide any specific guidance on developing and integrating UAVs into the force structure.

Nonetheless, the *Roadmap* represents a start on a strategic plan because it incorporates some of the key components of strategic planning provided by the Results Act framework as shown by the following:

- **Long Term Goals**—The *Roadmap* states its overall purpose and what it hopes to encourage the services to attain. The *Roadmap* refers to the Defense Planning Guidance's intent for UAVs as a capability and indicates that the guidance encourages the rapid advancement of this

capability. At the same time, it does not clearly state DOD's overall or long-term goals for its UAV efforts. Similarly, while it states that it wants to define clear direction to the services, it does not clearly identify DOD's vision for its UAV force structure from 2002 through 2027.

- **Approaches to Obtain Long-Term Goals**—The *Roadmap*'s Approach section provides a strategy for developing the *Roadmap* and meeting its goal. This approach primarily deals with identifying requirements and linking them to needed UAV payload capabilities, such as sensors and associated communication links. The approach then ties these requirements to forecasted trends in developing technologies as a means to try to develop a realistic assessment of the state of the technology in the future and the extent to which this technology will be sufficient to meet identified requirements. At the same time, however, the *Roadmap* does not provide a clear description of a strategy for defining how to develop and integrate UAVs into the future force structure. For example, the *Roadmap* does not attempt to establish UAV development or fielding priorities nor does it identify the most urgent mission-capability requirements. Moreover, without the sufficient identification of priorities, the *Roadmap* cannot link these priorities to current or developing UAV programs and technology.

Beyond strategic planning, the Results Act calls for agencies to establish results-oriented performance measures and to collect performance data to monitor progress. The *Roadmap* addresses, in part, key elements of performance measurement, as shown in the following:

- **Performance Goals**—The *Roadmap* established 49 specific performance goals to accomplish a variety of tasks. Some of these goals are aimed at fielding transformational capabilities without specifying what missions will be supported by the new capabilities. Others are to establish joint standards and control costs. Nonetheless, of the 49 goals, only 1 deals directly with developing and fielding a specific category of UAV platform to meet a priority mission-capability requirement—suppression of enemy air defenses or strike electronic attack. The remaining goals, such as developing heavy fuel aviation engines suitable for UAVs, are predominantly associated with developing UAV or related technologies, and UAV-related standards and policies to promote more efficient and effective joint UAV operations. Thus, the *Roadmap* does not establish overall UAV program goals.

- **Performance Indicators**—Some of the 49 performance goals have performance indicators that could be used to evaluate progress, such as the reliability goal for decreasing the annual mishap rate for large UAVs. However, many other goals have no established indicators, such as developing standards to maximize UAV interoperability. Furthermore, the *Roadmap* does not establish indicators that readily assess how well the program will meet the priority mission capabilities needed by the services and theater commanders.

While the *Roadmap* has incorporated some key strategic-planning components, it only minimally addresses the other key components. According to officials in the Office of the Secretary of Defense, the UAV *Roadmap* was not intended to provide an overarching architecture for UAVs departmentwide. It does, however, provide some significant guidance for developing UAV and related technologies. In addition to the 49 separate goals, the *Roadmap* also provides a condensed description of DOD's current UAVs, categorizing them as operational, developmental, and other (residual and conceptual) UAV systems. The *Roadmap* further sought to identify current and emerging requirements for military capabilities that UAVs could address.

In addition to the *Roadmap*, the Joint Requirements Oversight Council[9] has reviewed several UAVs and issued guidance for some systems, such as the Army's Shadow and the Air Force's Predator. According to Joint Staff officials, however, neither the Joint Staff nor the council has issued any guidance that would establish a strategic plan or overarching architecture for DOD's current and future UAVs. In addition, in June 2003 the Chairman of the Joint Chiefs of Staff created the Joint Capabilities Integration and Development System to provide a top-down capability-based process. Under the system, five Functional Capabilities Boards have been chartered, each representing a major warfighting capability area as follows: (1) command and control, (2) force application, (3) battle space awareness, (4) force protection, and (5) focused logistics. Each board has representatives from the services, the Combatant Commanders, and certain major functions of the Under Secretary of Defense. Each board is tasked with developing a list of capabilities needed to conduct joint operations in its respective functional area. Transformation of these

[9]The Joint Requirements Oversight Council is a joint organization made up of senior representatives from each of the services to review joint experimentation and make appropriate recommendations to the Chairman of the Joint Chiefs of Staff, CJCSI 3180.1, (Washington, D.C.: Oct. 31, 2002).

capabilities is expected, and the boards are likely to identify specific capabilities that can be met by UAVs. Nonetheless, according to Joint Staff officials, these initiatives will also not result in an overarching architecture for UAVs. However, the identification of capabilities that can be met by UAVs is expected to help enhance the understanding of DOD's overall requirement for UAV capabilities.

Planning Task Force Has Limited Authority

As a joint advocate for UAV efforts, the joint UAV Planning Task Force's authority is limited to program review and advice. The Task Force Director testified in March 2003 that the Task Force does not have program directive authority, but provides the Under Secretary of Defense for Acquisition, Technology, and Logistics with advice and recommended actions. [10] Without such authority, according to the Director, the Task Force seeks to influence services' programs by making recommendations to them or proposing recommended program changes for consideration by the Under Secretary. Nonetheless, according to DOD officials, the Task Force has attempted to influence the joint direction of service UAV efforts in a variety of ways, such as reviewing services' budget proposals, conducting periodic program reviews, and participating in various UAV-related task teams. For example, the Task Force has encouraged the Navy to initially consider an existing UAV rather than develop a unique UAV for its Broad Area Marine Surveillance mission. The Task Force has also worked with the Army's tactical UAV program, encouraging it to consider using the Navy's Fire Scout as an initial platform for the Future Combat Systems class IV UAV. The Task Force also regularly reviews services' UAV program budgets and, when deemed necessary, makes budget change proposals. For example, the Task Force, in conjunction with other Secretary of Defense offices, was successful in maintaining the Air Force's Unmanned Combat Aerial Vehicle program last year when the Air Force attempted to terminate it. The Task Force was also successful in overturning an attempt by the Navy to terminate the Fire Scout rotary wing UAV program. However, the Task Force cannot compel the services to adopt any of its suggestions. For example, according to the Director, no significant progress has been made in achieving better interoperability among the Services in UAV platform and sensor coordination, but work continues with the services, intelligence agencies, Department of Homeland Security, and U.S. Joint Forces Command to this end.

[10]Statement of the Director, Joint UAV Planning Task Force before the Subcommittee on Tactical Air and Land Forces, House Armed Services Committee, Mar. 26, 2003.

Developing Service-Specific UAV Force Structures without Clear Departmentwide Strategic Guidance Increases Risk

As they pursue separate UAV programs, the services and DOD agencies risk developing UAVs with duplicate capabilities, potentially leading to greater costs and increased interoperability challenges. The House Appropriation Committee, in a 2003 report, expressed concern that without comprehensive planning and review, there is no clear path toward developing a UAV force structure.[11] Thus, the committee directed that each service provide an updated UAV roadmap. These reports were to address the services' plans for the development of UAVs and how current UAVs are being employed. Officials from each of the services indicated that their UAV roadmap was developed to primarily address their individual service's requirements and operational concepts. However, in their views, high-level DOD guidance—such as the Joint Vision 2020, National Military Strategy, and Defense Planning Guidance—did not constitute strategic plans for UAVs that would guide the development of their individual service's UAV roadmap. These officials further stated that the Office of the Secretary of Defense's 2002 UAV *Roadmap* provided some useful guidance, especially in regard to UAV technology, but was not used to guide their UAV roadmap's development. Moreover, they did not view the Office of the Secretary of Defense's *Roadmap* as a departmentwide strategic plan nor an overarching architecture for integrating UAVs into the force structure. Moreover, according to the service officials developing the service-level UAV roadmaps, there was little collaboration with other services' UAV efforts.

Thus, DOD has little assurance that the current approach to developing and fielding UAVs in the services will result in closely coordinated or mutually reinforcing program efforts, as recommended by the Results Act. While the Office of the Secretary of Defense and the Joint Chiefs of Staff have tried to coordinate these efforts through the Joint UAV Planning Task Force, the absence of a guiding strategy and sufficient authority has made it difficult to have reasonable assurance that development and fielding are being done efficiently. If not managed effectively, this process can potentially lead to the development and fielding of UAVs across DOD and the services, which may unnecessarily duplicate each other. For example, the Army, Marine Corps, and Air Force are individually developing small, backpackable, lightweight UAVs for over-the-horizon and force protection reconnaissance missions. Likewise, both the Marine Corps and Army are individually pursuing various medium-sized tactical UAVs with both fixed

[11]Department of Defense Appropriation Bill, 2003 Report, H.R. Rep. No. 107-532 at 207.

and rotary wings to accomplish a variety of missions, including tactical reconnaissance, targeting, communications relay, and force protection.

Conclusions

Without a strategic plan and an oversight body with sufficient program directive authority to implement the plan, DOD has little assurance that its investment will result in UAV programs being effectively integrated into the force structure. Consequently, DOD risks poorly integrating UAVs into the force structure, which could increase development, procurement, and logistics costs; increase the risk of future interoperability problems; and unnecessarily duplicate efforts from one service to the next.

Recommendations for Executive Action

To enhance management control over the UAV program, we recommend that the Secretary of Defense take the following two actions:

- establish a strategic plan or set of plans that are based on mission requirements to guide UAV development and fielding by modifying the *Roadmap* or developing another document or documents and, at a minimum, ensure that the plan links operational requirements with development plans to ensure that the services develop systems that complement each other, will perform the range of missions needed, and avoid duplication and
- designate the UAV Task Force or another appropriate organization to oversee the implementation of a UAV strategic plan; provide this organization with sufficient authority to enforce the plan's direction, and promote joint operations and the efficient expenditure of funds.

Agency Comments and Our Evaluation

In written comments on a draft of this report, DOD partially concurred with our first recommendation and disagreed with the second. DOD partially concurred with our recommendation that the Secretary of Defense establish a strategic plan or set of plans to guide the development and fielding of UAVs by modifying the *Roadmap* or developing another appropriate document. DOD stated that its preferred way to address UAV planning was through the Joint Capabilities Integration and Development System, which is a capability-based planning process at the Joint Staff level that will identify UAV capabilities as needed across the five major joint warfighting areas through the use of the Functional Capabilities Boards.

We continue to believe that DOD needs a departmentwide strategic plan establishing the mission capabilities required of UAVs and the detailed

strategy for effectively developing and acquiring these capabilities. DOD acknowledged that its UAV *Roadmap* is not a broad strategic plan. Moreover, as we pointed out in our report, DOD recognized in its UAV *Roadmap* the need for a focused strategic plan for UAV capabilities, stating that the *Roadmap* was "to assist Department of Defense decision makers in developing a long-range strategy for UAV development and acquisition in future Quadrennial Defense Reviews and other planning efforts"—a strategy that has yet to be created. Such a strategic plan would provide the Office of the Secretary of Defense, the joint UAV Planning Task Force, or other appropriate authorities with the additional leverage and guidance to ensure effective oversight of the services' development and integration of UAV capabilities into the joint warfighting force structure. The Joint Capabilities Integration and Development System process, which DOD referred to, may be a useful tool for DOD to implement its capabilities-based planning approach. However, we continue to believe that a strategic plan for UAVs would be an important element in assuring UAV decisions and development reflect decisions made within the Joint Capabilities Integration and Development System process and are consistent with the strategic plan's intent.

DOD did not concur with our recommendation to designate the UAV Planning Task Force or another appropriate organization to oversee the implementation of a UAV strategic plan and provide this organization with sufficient authority to enforce the plan's direction. In its response, DOD indicated that the Secretary of Defense already has the authority needed to accomplish the intent of our recommendation. To buttress its point, DOD identified four actions taken to influence service development, evaluation, acquisition, and fielding of certain UAVs.

We acknowledge in our report that the formation of the Task Force represents a step in the right direction for DOD and that the Task Force has achieved some successes in coordinating some UAV programs. In our recent report on the Unmanned Combat Aerial Vehicle, in fact, we gave the Task Force credit for bringing the Air Force and Navy programs together into a joint program. However, the Task Force has not always been successful. For example, no significant progress has been made in achieving better interoperability among Service UAVs and sensors. Our concern is that with UAVs assuming ever-greater importance as key enabling technologies, and with increasing sums of money being allocated for a growing number of UAV programs, DOD needs more than a coordination mechanism. It needs an organization with authority to achieve the most cost-effective development of UAVs. Consequently, we continue to believe that the recommendation is sound, and that to

effectively implement a strategic plan for UAVs, the Secretary needs to designate an appropriate office with the authority to oversee and implement the strategy.

DOD's comments are included in their entirety in appendix II. DOD provided technical comments, which we included in our report as appropriate.

Unless you publicly announce its contents earlier, we plan no further distribution of this report until 14 days from its issue date. At that time,we will send copies of this report to other appropriate congressional committees; the Secretary of Defense; and the Director, Office of Management and Budget, and it will be available at no charge on GAO's Web site at http://www.gao.gov. If you or your staff have any questions about this report, please contact me at (202) 512-4914. Key contributors to this report are listed in appendix III.

Sincerely yours,

Neal P. Curtin
Director, Defense Capabilities
and Management

Appendix I: Scope and Methodology

To determine the extent to which the Department of Defense (DOD) requested, received, and used funds for major unmanned aerial vehicle (UAV) development efforts during fiscal years 1999-2003, we reviewed department and service documentation for major operational UAV programs, programs that are in procurement, and programs that are under development and to be procured by 2010. Funding data were obtained from various sources. We obtained the funding levels that DOD requested for UAV programs from the justification books used to support DOD's budget requests and the DOD Comptroller's Congressional Funding tracking database. We also obtained the funding levels appropriated to service UAV programs by analyzing the services' *Appropriation Status by Fiscal Year Program and Subaccounts* reports.[1] Additionally, we analyzed these reports to determine the extent to which these appropriated funds were obligated within their allowed program years. We did not conduct a comprehensive audit to reconcile the differences in appropriated and obligated funds.

To assess whether DOD's approach to developing and employing UAVs ensures that UAVs will be efficiently integrated into the force structure, we reviewed key departmentwide strategic documents, such as the Defense Planning Guidance, to identify the level of DOD's strategic planning for UAVs and its impact on service planning. We discussed the level of strategic planning for UAVs with key DOD and service officials from organizations with key roles in DOD's g development, such as the Office of the Secretary of Defense's Joint UAV Planning Task Force; the Office of the Assistant Secretary of Defense for Command, Control, Communications and Intelligence; the Joint Requirements Oversight Council; and U.S. Joint Forces Command. We reviewed each service's current UAV roadmap and held discussions with officials from service activities involved in planning and developing their UAV force structure roadmaps. We also reviewed in detail the Office of the Secretary of Defense's *Unmanned Aerial Vehicles Roadmap 2002-2027*, and assessed the extent to which it establishes an overall DOD management framework for developing and employing UAVs departmentwide. We used the

[1]These reports are commonly referred to as *Accounting Report* (M) 1002.

principles embodied in the Government Performance and Results Act of 1993 as criteria for assessing the UAV *Roadmap*.

We performed our work from June 2003 to February 2004 in accordance with generally accepted government auditing standards.

Appendix II: Comments from the Department of Defense

ACQUISITION,
TECHNOLOGY
AND LOGISTICS

OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON
WASHINGTON, DC 20301-3000

5 MAR 2004

Mr. Neal P. Curtin
Director, Defense Capabilities and Management
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Curtin:

This is the Department of Defense (DoD) response to the GAO draft report GAO-04-342, "FORCE STRUCTURE: Improved Strategic Planning Can Enhance DOD's Unmanned Aerial Vehicles Efforts," dated February 6, 2004 (GAO Code 350212).

The DoD partially concurs with the draft report's first recommendation, and does not concur with the second recommendation. The rationale for the DoD's position is provided at enclosure 1. Enclosure 2 provides additional comments and suggested changes to the report.

The Department appreciates the opportunity to comment on the draft report. For further questions concerning this report, please contact Dyke Weatherington, UAV Planning Task Force, 703-695-6188.

Sincerely,

Glenn F. Lamartin
Director
Defense Systems

Enclosures:
1. DOD Comments to the GAO Recommendations
2. DOD Comments on the Draft Report

GAO Draft Report – Dated February 6, 2004
GAO CODE 350212/GAO-04-342

"FORCE STRUCTURE: Improved Strategic Planning Can Enhance DoD's Unmanned Aerial Vehicles Efforts"

DEPARTMENT OF DEFENSE COMMENTS TO THE GAO RECOMMENDATIONS

RECOMMENDATION 1: Establish a strategic plan or set of plans based on mission requirements to guide UAV development and fielding by modifying the Roadmap or developing another document or documents and, at a minimum, ensure that the plan links operational requirements with development plans to ensure that the Services develop systems that complement each other, will perform the range of missions needed, and avoid duplication. (p. 17/GAO Draft Report)

DoD RESPONSE: Partially Concur. The DoD UAV Roadmap addresses a wide variety of UAV systems, however it is not a broad UAV strategic plan based on mission areas or requirements. UAVs contribute in several functional capability areas as described in the new Joint Capabilities Integration and Development System (JCIDS) process, including Battle Space Awareness (BA) and Force Application (FA). The JCIDS process establishes Functional Capabilities Boards (FCB) that are responsible for all aspects, materiel and nonmateriel, of their assigned functional area(s). Each FCB works to coordinate, integrate and deconflict the efforts of all DoD Components within its assigned functional area(s). Each FCB ensures that new capabilities are conceived and developed in an integrated joint warfighting context. UAV systems are one of many possible materiel solutions available to each FCB for given mission capabilities, and should not be the exclusive focus of a separate plan as recommended by the GAO. The focus of capability based planning within the Department should be (and is, with JCIDS) on the needed mission capability and *all* possible solutions, materiel and nonmateriel, including UAVs. We will continue to work with the Joint Staff to develop detailed mission capability plans.

RECOMMENDATION 2: Designate the UAV task force or another appropriate organization to oversee the implementation of a UAV strategic plan, providing this organization sufficient authority to enforce the plan's direction, and promote joint operations and efficient expenditure of funds. (p. 17/GAO Draft Report)

DoD RESPONSE: Non-Concur. The Under Secretary of Defense for Acquisition, Technology and Logistics (USD (AT&L)) established the UAV Planning Task Force (PTF) in 2001 to provide oversight and recommendations consistent with the responsibilities vested within AT&L; to include promoting payload commonality,

enclosure (1)

developing and enforcing interface standards, ensuring multi-Service cooperation, promoting joint experimentation for integrating UAVs into combat operations, assisting the transition of promising UAV-related technologies, and resolving overarching export policy and airspace issues. The Department believes that the USD (AT&L) has sufficient oversight and influence to effectively integrate UAV capability into the Combatant Commanders' operational forces. The Office of the Secretary of Defense (OSD) retains the ability to impact programs and modify program direction and resources when appropriate. The Planning, Programming, Budgeting, and Execution (PPBE) process affords OSD the opportunity to adequately review and enforce program activities, including UAV activities, across Services. Additionally, JCIDS, a capabilities-based process, focuses on developing integrated joint warfighting capability, providing analysis of requirements and solutions across Services. Together, these existing processes are in place to promote the sharing of information, identify areas of cooperation, and recommend program adjustments to correct capability gaps and redundancies.

The UAV PTF, in combination with other Department and Service organizations, has been very successful in influencing the development, evaluation, acquisition and fielding of UAV capability. A few examples of recent UAV efforts include:

1. The creation of a Joint Unmanned Combat Air System (J-UCAS) program, combining capabilities needed by the Air Force and Navy into a Joint program that will demonstrate critical capabilities and enhance jointness and competition, beginning with an Operational Assessment in 2007.
2. The Navy and Army are coordinating their program offices' efforts to develop their respective vertical takeoff UAV (VTUAV) capabilities by developing a common base aircraft to be used in Littoral Combat Ship and Future Combat Systems projects.
3. The Joint Small UAV Project Manager (PM) Working Group -- initiated on the UAV PTF's recommendation and chaired by the Army PM for UAVs -- promotes the sharing of information, data, techniques, and technologies related to small UAVs. Recent successes include an Army, United States Marine Corps (USMC), and SOCOM combined buy of a Small UAV infrared camera, saving 50 percent in unit costs; sharing training curriculum and training manuals between the USMC and the Army; providing a SOCOM training team to support Army efforts; and putting in place a frequency-compliant communications system development that supports all Small UAVs.
4. The UAV PTF and the Services have applied DoD experience and assets to support the Department of Homeland Security (DHS) conduct UAV demonstrations. The demonstrations have helped evaluate and characterize the potential to rapidly transition DoD UAV capability for DHS use.

enclosure (1)

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

Brian J. Lepore, (202) 512-4523

Acknowledgments

In addition to the person named above, Fred Harrison, Lawrence E. Dixon, James Mahaffey, James Driggins, R.K. Wild, and Kenneth Patton also made major contributions to this report.

Related GAO Products

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