

August 2004

# DEFENSE SPACE ACTIVITIES

## Additional Actions Needed to Implement Human Capital Strategy and Develop Space Personnel



G A O

Accountability \* Integrity \* Reliability



Highlights of [GAO-04-697](#), a report to the Senate and House Committees on Armed Services

### Why GAO Did This Study

The Department of Defense (DOD) relies on space for many critical capabilities, and its continued success in space operations depends on having sufficient space-qualified personnel. Space-qualified personnel are needed to develop technology, doctrine, and concepts and operate complex systems. In the National Defense Authorization Act for Fiscal Year 2004, Congress required DOD to develop a strategy for developing and integrating national security space personnel. DOD completed it in February 2004.

Congress also required GAO to assess DOD's space human capital strategy and the military services' efforts to develop their space personnel. In the first of two required reports, GAO assessed (1) whether DOD's space human capital strategy and management approach promote development and integration of the services' space personnel and (2) the extent of the services' initiatives to develop and manage their space personnel.

### What GAO Recommends

GAO recommends that DOD develop an implementation plan for its strategy, as well as develop strategies and establish focal points for managing the services' space personnel.

In its comments, DOD generally concurred with GAO's report.

[www.gao.gov/cgi-bin/getrpt?GAO-04-697](http://www.gao.gov/cgi-bin/getrpt?GAO-04-697).

To view the full product, including the scope and methodology, click on the link above. For more information, contact Henry L. Hinton, Jr. at (202) 512-4300 or [hintonh@gao.gov](mailto:hintonh@gao.gov).

## DEFENSE SPACE ACTIVITIES

# Additional Actions Needed to Implement Human Capital Strategy and Develop Space Personnel

### What GAO Found

DOD's space human capital strategy is a significant first step that promotes the development and integration of DOD's space personnel by providing strategic goals and objectives; however, DOD does not have a complete results-oriented management approach to implement the strategy because it does not include an implementation plan that details specific actions, time frames, and evaluation measures. The space human capital strategy provides general direction for developing and integrating DOD space personnel, and it identified key actions needed for implementation. DOD has not completed any of these actions. Without an implementation plan, DOD will not be in a sound position to effectively monitor and evaluate implementation of the strategy and achieve the strategy's purpose of integrating the services' space personnel into a cohesive DOD total force.

The military services vary in the extent to which they have identified and implemented initiatives to develop and manage their space personnel. The Air Force and the Marine Corps have taken significant actions in developing and managing their space personnel, including developing space human capital strategies and designating organizational focal points. The Air Force, which has the largest number of space personnel, approved its space human capital strategy in July 2003, and it is implementing its initiatives (see table below). The other services are working on similar initiatives and have completed some, but many will take years to fully implement. The Army's and the Navy's actions in developing their space personnel have been limited because they do not have clear goals and objectives for developing their space personnel or organizational focal points to manage them. Without these tools, the Army and the Navy may not be able to determine their requirements for space personnel and develop sufficient numbers of space personnel with the necessary training, education, and experience to meet service and joint needs.

#### Air Force Space Personnel Strategy Initiatives

Initiative	Description
Identification and classification of space personnel	Determine the unique skills that distinguish space personnel from personnel in other career specialties and identify the space-qualified personnel.
Education and training	Institute stronger, technically oriented space education and training programs.
Positions and requirements	Identify each space personnel position and determine the education, experience, and certification requirements for every position.
Certification	Design a certification program to measure progress throughout an individual's career.
Professional development	Issue career development guidance for space personnel.
Management	Establish a permanent space professional management function.

Source: GAO's analysis of information provided by the Air Force Space Command.

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United States Government Accountability Office  
Washington, DC 20548

August 11, 2004

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

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

The United States increasingly relies on space for many critical military and civilian purposes, such as communications and imagery. The Department of Defense (DOD) employs space assets to support a wide range of military missions, such as intelligence collection, battlefield surveillance and management, global command and control, and navigation assistance. Recent military operations have demonstrated that space capabilities are critical to the success of defense missions, such as precision engagement, search and rescue, and close air support. Space-qualified personnel, both military and civilian, are needed to develop technology, doctrine, and operational concepts for employing space assets in the future and to operate complex space systems. In 2001, a space commission concluded that DOD did not have a strong military space culture, which included focused career development and education and training. DOD is responsible for leading efforts to synchronize the military services' space personnel activities and integrating the services' space personnel into a cohesive total force to the maximum extent practicable. The services are responsible for developing and maintaining space-qualified personnel in sufficient numbers to support their interests in space requirements, acquisition, and operations and participate in joint activities.

During the 1990s, Congress was concerned about DOD's management and organization of space activities and chartered a commission to review national security space activities. In January 2001, the commission report identified some long-standing management challenges including

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developing and maintaining a group of professional personnel, known as the space cadre, for leadership roles in all aspects of space-related activities. In its report, the commission made recommendations to improve DOD's management and organization of space operations. In April 2003, we reported on the implementation of the commission's recommendations, as required by Congress.<sup>1</sup> We recommended that DOD, in conjunction with the services, establish a departmentwide space human capital strategy with goals, measurable objectives, and timelines to develop and maintain a cadre of military and civilian space professionals. DOD concurred with our recommendation.

Additionally, Congress, in the National Defense Authorization Act for Fiscal Year 2004, required the Secretary of Defense to develop a strategy for DOD to (1) promote the development of space personnel career fields within each of the military departments and (2) ensure that the space personnel career fields developed by the military departments are integrated with each other to the maximum extent practicable.<sup>2</sup> The act also required the Secretary of Defense to provide a comprehensive assessment of the adequacy of the actions of the Secretary of the Air Force to establish a space career field for Air Force officers. DOD provided the strategy and assessment to Congress in February 2004. The strategy set out goals, objectives, and approaches to develop and integrate DOD's space cadre. The assessment listed actions the Air Force had taken and plans to take to improve management of its space cadre and training for its space personnel.

The act also required us to review DOD's space human capital strategy and the status of efforts by the military departments to develop their space personnel career fields. The act required us to assess (1) DOD's strategy and the efforts of the military departments for developing the personnel required and (2) the effectiveness of DOD's strategy and the efforts by the military departments in developing the personnel required and the progress made in integrating the space career fields of the military departments. This report responds to the first of these two requirements. As agreed with your committees, our objectives for this report were to (1) determine whether DOD's space human capital strategy and

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<sup>1</sup> U.S. General Accounting Office, *Defense Space Activities: Organizational Changes Initiated, but Further Management Actions Needed*, GAO-03-379 (Washington, D.C.: Apr. 18, 2003).

<sup>2</sup> Pub. L. 108-136, Sec. 547, Nov. 24, 2003.

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management approach to implementing the strategy promote the development and integration of the military services' space cadres and (2) assess the extent of each of the military services' initiatives to develop and manage their space cadres. To determine if DOD's strategy and approach to implementing it promote the development and integration of the military services' space cadres, we reviewed and analyzed the strategy, compared the strategy to the elements of a results-oriented management framework, and conducted discussions with DOD and military service officials. To assess the extent to which the military services have taken initiatives to develop their space cadres, we reviewed and analyzed the initiatives of the services. We conducted our review from October 2003 through June 2004 in accordance with generally accepted government auditing standards. (See appendix I for more detailed information on our scope and methodology.)

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## Results in Brief

DOD's space human capital strategy is a significant first step that promotes the development and integration of DOD's space cadres by providing strategic goals and objectives; however, DOD does not have a complete management approach for implementing its strategy. DOD's management approach is incomplete because it does not contain the principles of a results-oriented management framework, which would include a plan that details specific actions, responsibilities, time frames, and evaluation measures to implement the strategy. The strategy describes long-term goals for space personnel integration and education and highlights some key actions that DOD needs to take to develop its space personnel programs. The strategy also articulates objectives related to leadership, policy, career development, education, training, data collection, management, and best practices. DOD has initiated some steps to implement its strategy, but it has not completed any of the key actions identified in the strategy. However, without a detailed plan that identifies key actions, DOD will not be in a sound position to effectively monitor and evaluate implementation of the strategy to achieve the strategy's purpose of integrating the services' space personnel into a cohesive DOD total force to the extent practicable.

The military services vary in the extent to which they have identified and implemented initiatives to develop and manage their space cadres. The Air Force and the Marine Corps have taken significant actions to develop and manage their space cadres; however, the Army's and Navy's actions have been limited because these two services do not have clear goals and objectives for their space cadres or focal points designated to manage the cadres. Long-term strategies and effective leadership through a centralized

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organizational focal point are important tools the military services can use to develop and manage their space cadres. The Air Force, which has the largest space cadre, approved a strategy for developing, educating, and maintaining its space cadre in July 2003 and designated the Commander, Air Force Space Command, as the focal point for developing and managing its space cadre. The Air Force has begun implementing its strategy, including revising training courses and identifying the members of its space cadre, and plans to complete implementation of most of its initiatives by 2006. The Marine Corps, which has the smallest number of space personnel, has developed a strategy and established a centralized focal point. It has also identified tasks and milestones to implement its strategy and completed many of the tasks outlined in its implementation plan. The Army has identified officers with space experience and training as members of its space cadre and established specialized education for these space officers, but the Army does not have clear goals and objectives for the future because it has not developed a space cadre strategy or designated a permanent, organizational focal point. The Army does not plan to develop a strategy until it decides whether enlisted and civilian personnel will be managed as part of its space cadre. Further, the Army has not identified a focal point for managing its space cadre that would provide leadership on developing and maintaining the required space personnel. The Navy is in the process of identifying critical space positions and military and civilian personnel who have space training, education, and experience to form the basis for its space cadre. The Navy plans to develop a strategy for developing and managing its space personnel by October 2004 based on its April 2004 space policy. The Navy does not have an organizational focal point for space cadre issues because space is seen as a function that is integrated across Navy activities. However, without strategies and organizational focal points, the Army and the Navy may not be able to determine their requirements for space personnel and develop a cadre of sufficient numbers of space professionals with the required training, education, and experience to meet service and joint requirements.

We recommend that DOD develop a plan to implement the key actions identified in the defensewide space human capital strategy. We also recommend that the Army and the Navy develop space human capital strategies and establish focal points to develop their space cadres and manage their space cadre initiatives. In commenting on a draft of this report, DOD generally concurred with the report.

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## Background

The national security space sector is primarily comprised of military and intelligence activities. The U.S. Strategic Command, one of the combatant commands, is responsible for establishing overall operational requirements for space activities, and the military services are responsible for satisfying these requirements to the maximum extent practicable. The Air Force is DOD's primary procurer and operator of space systems and spends the largest share of defense space funds. The Air Force Space Command is the major component providing space forces for the U.S. Strategic Command. The Army controls a defense satellite communications system and operates ground mobile terminals. The Army Space and Missile Defense Command conducts space operations and provides planning, integration, and control and coordination of Army forces and capabilities in support of the U.S. Strategic Command. The Navy operates several space systems that contribute to surveillance and warning and is responsible for acquiring the Mobile User Operations System, the next generation ultrahigh frequency satellite communication system. The Marine Corps uses space to provide the warfighter with intelligence, communications, and position navigation. The National Reconnaissance Office designs, procures, and operates space systems dedicated to national security activities and depends on personnel from each of the services' space cadres to execute its mission.

Due to continuing concerns about DOD's management of space activities, in October 1999 Congress chartered a commission—known as the Space Commission—to assess the United States' national security space management and organization. In its January 2001 report, the Space Commission made recommendations to DOD to improve coordination, execution, and oversight of the department's space activities.<sup>3</sup> One issue the Space Commission identified was the need to create and maintain a highly trained and experienced cadre of space professionals who could master highly complex technology, as well as develop new concepts of operations for offensive and defensive space operations. The Space Commission noted that the defense space program had benefited from world-class scientists, engineers, and operators, but many experienced personnel were retiring and the recruitment and retention of space-qualified personnel was a problem. Further, the commission concluded that DOD did not have a strong military space culture, which included focused career development and education and training. In October 2001,

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<sup>3</sup> *Report of the Commission to Assess United States National Security Space Management and Organization*, Washington, D.C., January 11, 2001.



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the Secretary of Defense issued a memorandum directing the military services to draft specific guidance and plans for developing, maintaining, and managing a cadre of space-qualified professionals.

A DOD directive in June 2003 designated the Secretary of the Air Force as the DOD Executive Agent for Space, with the Executive Agent responsibilities delegated to the Under Secretary of the Air Force.<sup>4</sup> The directive stated that the Executive Agent shall develop, coordinate, and integrate plans and programs for space systems and the acquisition of DOD major space programs to provide operational space force capabilities. Further, the directive required the Executive Agent to lead efforts to synchronize the services' space cadre activities and to integrate the services' space personnel into a cohesive joint force to the maximum extent practicable. The directive also makes the military services responsible for developing and maintaining a cadre of space-qualified professionals in sufficient quantities to represent the services' interests in space requirements, acquisition, and operations.

We have identified strategic human capital management as a governmentwide high-risk area and provided tools intended to help federal agency leaders manage their people.<sup>5</sup> Specifically, we identified a lack of a consistent strategic approach to marshal, manage, and maintain the human capital needed to maximize government performance and ensure its accountability. In our exposure draft on a model of strategic human capital management,<sup>6</sup> we identified four cornerstones of human capital planning that have undermined agency effectiveness, which are leadership; strategic human capital planning; acquiring, developing, and retaining talent; and results-oriented organizational cultures. We also cited critical success factors for strategic human capital planning, including integration and data-driven human capital decisions. Furthermore, we reported that many federal agencies had not put in place a strategic human capital planning process for determining critical organizational

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<sup>4</sup> Section 1.2, DOD Directive 5101.2, *DOD Executive Agent for Space*, June 3, 2003.

<sup>5</sup> U.S. General Accounting Office, *High-Risk Series: An Update*, [GAO-01-263](#) (Washington, D.C.: January 2001).

<sup>6</sup> U.S. General Accounting Office, *A Model of Strategic Human Capital Management*, [GAO-02-373SP](#) (Washington, D.C.: Mar. 15, 2002).

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capabilities, identifying gaps in these capabilities and resources needed, and designing evaluation methods.<sup>7</sup>

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## DOD Issued a Space Human Capital Strategy but Has No Implementation Plan

DOD's space human capital strategy, which we believe is a significant first step, promotes the development and integration of the military services' space cadres; however, DOD has not developed a plan to implement actions to achieve the strategy's goals and objectives. A strategy and a plan to implement the strategy are central principles of a results-oriented management framework. DOD's space human capital strategy establishes direction for the future, includes goals for integrating the services' space cadres and developing space-qualified personnel, and identifies approaches and objectives to meet the strategy's goals. An implementation plan for the strategy could include specific actions, responsibilities, time frames, and evaluation measures. DOD has begun to implement some of the key actions identified in the strategy.

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## Management Framework Would Include a Strategy and an Implementation Plan

A results-oriented management framework provides an approach that DOD could use to develop and manage the services' space cadres, including a strategy and a plan to implement the strategy. Sound general management tenets, embraced by the Government Performance and Results Act of 1993,<sup>8</sup> require agencies to pursue results-oriented management, whereby program effectiveness is measured in terms of outcomes or impact, rather than outputs, such as activities and processes. Management principles and elements can provide DOD and the military services with a framework for strategic planning and effectively implementing and managing programs. Table 1 describes the framework and its principles and elements.

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<sup>7</sup> U.S. General Accounting Office, *Human Capital: Key Principles for Effective Strategic Workforce Planning*, [GAO-04-39](#) (Washington, D.C.: Dec. 11, 2003).

<sup>8</sup> Pub. L. 103-62.

**Table 1: Elements of a Results-Oriented Management Framework**

Principle	Critical elements
Define the program’s overall purpose, mission, and intent (i.e., strategy).	<ul style="list-style-type: none"> <li>• <i>Long-term goals</i>—typically general in nature that lay out what the agency wants to accomplish in the next 5 years.</li> <li>• <i>Approaches</i>—general methods the agency plans to use to accomplish long-term goals.</li> <li>• <i>External factors</i>—factors that may significantly affect the agency’s ability to accomplish goals.</li> </ul>
Describe detailed implementation actions as well as measurements and indicators of performance (i.e., performance plan).	<ul style="list-style-type: none"> <li>• <i>Performance goals</i>—stated in objective measurable form.</li> <li>• <i>Resources</i>—a description of the resources needed to meet the performance goals.</li> <li>• <i>Performance indicators</i>—mechanisms to measure outcomes of the program.</li> <li>• <i>Evaluation plan</i>—means to compare and report on program results versus performance goals.</li> <li>• <i>Corrective actions</i>—a list of actions needed to address or revise any unmet goals.</li> </ul>

Source: GAO.

## DOD’s Space Human Capital Strategy Established Direction for the Future

In February 2004, DOD issued its space human capital strategy that established direction for the future and included overall goals for developing and integrating space personnel. To develop the strategy, the DOD Executive Agent for Space established a joint working group comprised of representatives from the Office of the Secretary of Defense, each of the military services, the National Reconnaissance Office, and various other defense organizations. The Office of the Secretary of Defense and the military services reviewed the strategy, and the DOD Executive Agent for Space approved it. The space human capital strategy’s goals flow from the goals in DOD’s Personnel and Readiness Strategic Plan,<sup>9</sup> which is the integrated strategic plan that includes the major goals that directly support the mission of the Office of the Under Secretary of Defense for Personnel and Readiness. Two of these goals include:

<sup>9</sup> Department of Defense, Office of the Under Secretary of Defense for Personnel and Readiness, *Strategic Plan 2001-2006*.

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(1) integrating active and reserve component military personnel, civilian employees, and support contractors into a diverse, cohesive total force and (2) providing appropriate education, training, and development of the total force to meet mission requirements.

The six goals for space professional management identified in the space human capital strategy are to

- ensure the services develop space cadres to fulfill their unique mission needs;
- synchronize the services' space cadre activities to increase efficiency and reduce unnecessary redundancies;
- improve the integration of space capabilities for joint war fighting and intelligence;
- assign the best space professionals to critical positions;
- increase the number of skilled, educated, and experienced space professionals; and
- identify critical positions and personnel requirements for them.

The strategy also described approaches designed to accomplish DOD's long-term goals. The approaches provided general direction for departmentwide actions in areas identified as key to the long-term success of the strategy, such as establishing policy concerning human capital development and a professional certification process for space personnel and identifying and defining critical positions and education overlaps and gaps. In addition, the strategy recognized external factors that should be considered departmentwide and by the services in developing implementation actions. Such factors include increasing reliance on space for critical capabilities in the future, the need for more space-qualified people, and the need to develop new systems and technologies to sustain the United States as a world leader in space.

The space human capital strategy also identified objectives necessary to achieve the strategy's goals in the areas of leadership, policy, career development, education, training, data collection, management, and best practices. The strategy places responsibility for achieving the objectives with each service and component. The objectives include, among others, promoting the development of a cadre of space professionals within each service, enhancing space education and training, creating management processes to meet future programmatic needs, and identifying and implementing best practices. Table 2 shows the strategy's objectives.

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**Table 2: DOD’s Space Human Capital Resources Strategy Objectives**

<b>Category</b>	<b>Objectives</b>
Leadership	<ul style="list-style-type: none"><li>• Under the leadership of the DOD Executive Agent for Space, create a Senior Officer Forum to discuss policy, validate requirements, approve space professional development plans, and guide the synchronization and integration of the department’s space cadre efforts.</li><li>• Promote the development of a cadre of space professionals within each of the military departments.</li><li>• Provide guidance on professional development efforts and activities.</li></ul>
Policy	<ul style="list-style-type: none"><li>• Develop, implement, and assess space professional development policies and practices where practicable.</li></ul>
Education and training	<ul style="list-style-type: none"><li>• Establish a common baseline of knowledge and expertise.</li><li>• Enhance space education and training.</li><li>• Eliminate unnecessary redundancies or overlaps in training and education.</li><li>• Eliminate critical gaps that may exist in training and education.</li><li>• Establish arrangements for joint use of education and training programs.</li></ul>
Data collection	<ul style="list-style-type: none"><li>• Collect data on space cadre size, skills, competencies, promotion, retention, retirement eligibility, and personnel availability, as well as designated space cadre positions, requirements to fill positions, vacancies of “critical” positions and rate of filling positions with unqualified personnel.</li></ul>
Management	<ul style="list-style-type: none"><li>• Create a human capital resources management team.</li><li>• Assess DOD, joint, and component needs, gaps in skills and competencies of available personnel, and adequacy of available pipeline to fulfill programmed need.</li><li>• Create management process to meet future programmatic needs and ensure organizations have the right people, with the right skills, doing the right jobs, in the right place, at the right time by identifying and selectively manning “critical” billets and establishing a baseline certification process.</li><li>• Direct resources and efforts to solve appropriate space professional development synchronization and integration issues when institutional barriers exist.</li><li>• Develop and coordinate professional development plans and integrate the plans into space planning and programming documentation.</li></ul>
Best practices	<ul style="list-style-type: none"><li>• Identify and implement best practices to the maximum extent practicable.</li><li>• Create and execute demonstration programs to test new approaches.</li></ul>

Source: DOD Executive Agent for Space, *Space Human Capital Resources Strategy: A Report to the Congressional Defense Committees*, Arlington, Virginia, February 2004.

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## DOD Has Not Developed an Implementation Plan for Its Strategy

DOD has not developed a detailed implementation plan for the key actions in its space human capital strategy that could include more specific implementing actions, identify responsibilities, set specific time frames for completion, and establish performance measures. As previously mentioned, a results-oriented management framework would include a plan with detailed implementation actions and performance measurements, in addition to incorporating performance goals, resources needed, performance indicators, and an evaluation process.

DOD's strategic approach, as outlined in its strategy, identifies key actions to meet the space human capital strategy's objectives and indicates three time phases for implementing the actions. However, DOD has not started to develop an implementation plan for its strategy. A DOD official said the department plans to complete an implementation plan by November 2004, while it is implementing the key actions that have been identified in the strategy. Until an implementation plan is developed, the DOD Executive Agent for Space plans to hold meetings of the working group that developed the strategy to discuss space cadre initiatives and integration actions.

Before developing an implementation plan, DOD plans to collect information from the services to establish a baseline on their current space cadres, according to a DOD official. Some of the information to be collected includes size, skills, and competencies of the personnel in the services' space cadres; numbers of space positions and positions that are vacant; promotion and retention rates for space personnel; and retirement eligibility and personnel availability projections. The strategy indicates that collecting this information was one of the key actions in the first phase of the strategy's implementation and was to have been completed by April 2004. However, DOD has not requested the information from the services because officials had not completely determined what information will be collected, how it will be analyzed, and how it will be used to develop an implementation plan.

DOD has begun implementing some actions identified in the strategy as key to helping further develop and integrate the services' space cadres; however, DOD had not completed any of these actions by the end of our review. Actions currently under way include

- preparing for an education and training summit;
- evaluating space cadre best practices;
- developing policy on human capital development and use;

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- determining the scope, nature, and specialties associated with space personnel certification; and
  - issuing a call for demonstration projects.

DOD plans to complete most of the key actions by November 2004, although it has not developed specific plans and milestones for completing each action.

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## Extent of Services' Initiatives to Develop Space Cadres Varies

The military services vary in the extent to which they have identified and implemented initiatives to develop and manage their space cadres. The Air Force and the Marine Corps have completed space human capital strategies and established organizational focal points with responsibility for managing their space cadres, but the Army and the Navy have not completed these important first steps. The services are executing some other actions to develop and manage their space cadres, and the actions have been implemented to varying extents. Some of the actions include determining what types of personnel and specialties to include in their space cadres and developing or revising their education and training. Even though the services have completed some of these initiatives, many are not complete and will require years to fully implement.

DOD has established the overall direction for space human capital development and integration, but the services are responsible for defining their unique space cadre goals and objectives, determining the implementing actions required, and creating a management structure to be responsible for implementation. The Space Commission recommended that the Air Force centralize its space cadre management and concluded that without a centralized management authority to provide leadership, it would be almost impossible to create a space cadre. Even though this recommendation was directed to the Air Force, which has the largest numbers of space professionals and responsibility for the most varied range of space operations, the principle that strong leadership is needed to reach space cadre goals also applies to the other military services.

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## Air Force Has Taken Actions in Developing Its Space Cadre

The Air Force approved its space cadre strategy in July 2003,<sup>10</sup> and it is implementing the initiatives it has identified to meet the strategy's goals. The strategy provided guidance on developing and sustaining the Air Force's space cadre. Further, the Air Force developed an implementation plan with time lines for completion of certain initiatives. The Air Force also designated the Air Force Space Command as the focal point to manage Air Force space cadre issues.

The Air Force's strategy defined the Air Force's space cadre as the officers, enlisted personnel, reserves, National Guard, and civilians needed to research, develop, acquire, operate, employ, and sustain space systems in support of national security space objectives. The strategy included actions for identifying all space professionals who would make up its space cadre; providing focused career development; and defining career management roles, responsibilities, and tools. Currently, the Air Force has the largest of the services' space cadres with an estimated 10,000 members identified based on their education and experience. The strategy also identified planned resources to implement space cadre initiatives through fiscal year 2009. For fiscal year 2004, the Air Force Space Command received \$9.1 million to develop and manage its space cadre. According to Command officials, \$4.9 million went to the Space Operations School to develop new space education courses, and the remainder was designated for other space cadre activities. For fiscal year 2009, the funding level is planned to increase to about \$21 million to fund the planned initiatives, especially the efforts related to education and training.

After the Air Force issued its space cadre strategy, it developed a detailed plan to implement the strategy, and it is executing the initiatives in accordance with its time lines. This implementation plan focuses on six key initiatives, as shown in table 3.<sup>11</sup>

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<sup>10</sup> Air Force Space Command, *U.S. Air Force Space Professional Strategy*, April 16, 2003.

<sup>11</sup> The Air Force has expanded the concept of its space cadre from the "Air Force officer career field for space" to include the total force of officers, enlisted personnel, and government civilians.



**Table 3: Air Force Space Cadre Implementation Initiatives and Status**

Initiative	Status
<b>Identification and classification of space cadre:</b> Determine the unique skills that distinguish space cadre personnel from personnel in other career specialties and identify space cadre members.	<ul style="list-style-type: none"> <li>• Officers and enlisted personnel have been identified.</li> <li>• Process of identifying civilians is under way and plan to complete by fall 2004.</li> <li>• Types and levels of experience of individuals that will be used to document and track the combination of skills obtained by each space cadre member have been identified, as well as the set of skills required to serve in each space position.</li> </ul>
<b>Education and training:</b> Institute stronger, technically oriented space education and training programs.	<ul style="list-style-type: none"> <li>• Air Force's Space Operations School has fielded new space courses and is developing more to provide a continuum of educational courses spread throughout the space professional's career. Many courses are open to all services.</li> <li>• Plans for a multi-service National Security Space Institute are being developed.<sup>a</sup></li> </ul>
<b>Positions and requirements:</b> Identify each space cadre position and determine the education, experience, and certification requirements for every position.	<ul style="list-style-type: none"> <li>• A data call has been initiated to identify and validate every space position in the Air Force and the requirements to fill that position. Estimated to be complete by fall 2004.</li> <li>• Information developed will be compiled into space cadre career planning guides (see professional development).</li> </ul>
<b>Certification:</b> Design a certification program to measure progress throughout an individual's career.	<ul style="list-style-type: none"> <li>• Certification plan is complete for officers and enlisted personnel, but it has not been implemented.</li> <li>• Civilian certification requirements are under development.</li> </ul>
<b>Professional development:</b> Issue career development guidance for space personnel.	<ul style="list-style-type: none"> <li>• Career planning guides are being developed for individual space personnel, with publication planned in spring 2005.</li> </ul>
<b>Management:</b> Establish a permanent space professional management function.	<ul style="list-style-type: none"> <li>• The Directorate of Personnel at Air Force Space Command took over space professional management in summer 2004.</li> <li>• The space professional management office will provide continuing management and oversight of the implementation of the space cadre initiatives.</li> </ul>

Source: GAO's analysis of information provided by the Air Force Space Command.

<sup>a</sup>The National Security Space Institute, when established, is intended to be a multi-service resource for centralized space power education and training across the national security space community by providing advanced space operations curriculum and tactics development programs for mid-career, commander-level, and senior-leadership space professionals.

According to the Air Force Space Command, the Air Force plans to implement most of these initiatives by 2006. Initiatives related to the development of a National Security Space Institute will likely not be completed by 2006 because, in addition to developing curriculum and organizational structure issues, the Institute will require funding and facilities.

Appointed by the Secretary of the Air Force in July 2003, the Commander, Air Force Space Command, is the focal point for managing career

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development, education, and training for the Air Force space cadre. To assist in executing this responsibility, the Commander established a Space Professional Task Force within the Command to develop and implement initiatives and coordinate them with the national security space community. According to the Commander, the centralized management function with the authority to develop and implement Air Force policy governing career development of Air Force space personnel has enabled the Command to move forward with implementation activities and fully integrate the Air Force's strategy with the Air Force's overall force development program.

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### Marine Corps Developed Space Cadre Strategy and Is Implementing It

The Marine Corps has initiated actions to develop its space cadre and has many tasks to implement its initiatives either completed or under way. Although the Marine Corps' space cadre is the smallest of the services with 61 active and reserve officers who were identified based on their education and experience, the Marine Corps has a space cadre strategy to develop and manage its space cadre and has an implementation plan to track initiatives. The space cadre strategy was issued as a part of the DOD space human capital strategy in February 2004. To implement its strategy, the Marine Corps has identified key tasks and established milestones for completion, and it is implementing them. In addition, the Marine Corps has identified a focal point in Headquarters, U.S. Marine Corps, to manage its space cadre. There is no Marine Corps funding specifically for actions to develop its space cadre. Furthermore, the Marine Corps does not anticipate a need for any such funding, according to a Marine Corps official.

The Marine Corps' strategy specifies 10 objectives for developing and maintaining space professionals:

- establish an identifiable cadre of space-qualified enlisted and civilian marines;
- create and staff additional space personnel positions in the operating forces;
- create and staff additional space positions at national security space organizations;
- improve space operations professional military education for all Marine Corps officers;
- focus the graduate education of Marine Corps space operations students to support Marine Corps needs;
- leverage interservice space training to ensure the development and proficiency of the space cadre;

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- develop a management process through which interested officers can be assigned to multiple space-related positions during their careers and still compete for promotion with their peers;
  - develop a process and structure for space professionals in the Marine Corps reserves through which they can support operations, training, and exercises through augmentation and mobilization;
  - fully participate in the DOD Executive Agent for Space's efforts to create a space cadre; and
  - incorporate appropriate space professional certification processes into the management of the Marine Corps' space cadre.

The Marine Corps has identified actions to reach these objectives and developed an implementation plan with milestones to monitor the completion of these actions. For example, the Marine Corps established a space cadre working group to address issues associated with the identification, training, and assignment of space cadre officers. The Marine Corps also contracted a study to obtain data to help manage Marine Corps space personnel positions, determine space cadre requirements, and assess other services' training and education opportunities. According to the Marine Corps' strategy, the Marine Corps has started integrating joint doctrine for space operations into its professional military education programs and has coordinated with the Naval Postgraduate School to create Marine Corps-specific space systems courses.

The Marine Corps has designated the Deputy Commandant for Plans, Policies, and Operations within the Headquarters, U.S. Marine Corps, as the management focal point for space cadre activities. A general officer within this office has overall responsibility for space matters. The focal point for the space cadre is responsible for coordinating and tracking actions to implement the strategy.

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### Army Has Taken Some Actions to Develop Its Space Cadre, but It Does Not Have a Strategy or Focal Point

The Army has taken some actions to develop its space cadre, but it does not have clear goals and objectives for the future because it has not developed a space cadre strategy or identified a focal point to manage its space cadre. Until it adopts a strategy that encompasses a total force of officers, enlisted personnel, and civilians, the Army may not be able to develop sufficient numbers of qualified space personnel to satisfy requirements within the Army and in joint organizations. However, according to Army officials, the Army does not intend to issue a strategy until it decides whether its space cadre should include space officers, enlisted personnel, and civilians because the strategy would be different if the cadre is expanded beyond space operations officers.

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In 1999, the Army created a career path for its space operations officers and issued career development guidance for them.<sup>12</sup> The Army considers these officers, currently numbering about 148 on active duty, to be its space cadre.<sup>13</sup> The Army's intent in creating the career path was to provide space expertise and capabilities to develop space doctrine, training, personnel, and facilities where they are needed throughout DOD in support of military operations. Since 1999, the Army has developed a specialized training course to provide space operations officers with the essential skills needed to plan and conduct space operations. However, it has not determined the critical positions for space officers or the number of officers needed to enable it to effectively accomplish its goals of supporting Army and DOD-wide operations. Thus, the Army may be training too many or too few space operations officers, and space operations officers may not be placed in the most critical positions to support Army interests in space.

The Army is considering whether to expand its definition of its space cadre to include other personnel beyond the space operations officers. The Army is conducting two studies that Army officials said would provide a basis for this decision. In 2001, the Army began a 5-year study to help it determine whether enlisted personnel should be added to its space cadre and, if so, how this would be accomplished. The study is intended to determine how to recruit, train, and develop enlisted space personnel and to assess the possibility of creating a space career management field for them. In June 2004, the Army began a separate 15-month study to provide additional information that would help it decide whether to expand its space cadre definition. A decision on whether to expand the cadre to include additional personnel is not expected until 2005.

The Army has not designated a permanent organizational focal point to develop and manage its space cadre. According to Army officials, the Army has to decide whether to expand its space cadre before it can designate a permanent management focal point because these decisions have implications as to which organization should have overall responsibility. Currently, three different organizations have various responsibilities for Army space cadre issues. Operations and Plans within Army headquarters has broad responsibility for policy, strategy, force

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<sup>12</sup> Department of the Army Pamphlet 600-3, Chapter 41, October 1998.

<sup>13</sup> In addition to the space cadre's officers, the Army has identified another 593 officers who have some space experience, but they are not considered part of the Army's space cadre.

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management, and planning. Two other organizations have management responsibilities for the space operations officers that comprise the current Army space cadre: Army Space and Missile Defense Command provides personnel oversight for the space operations officers and Army Human Resources Command manages space operations officer assignments. According to Army officials, management of space personnel has not been centralized because the Army is a user of space and has integrated its space capabilities into various Army branches. As a result, no single office is charged with providing leadership on space issues and ensuring that the Army's space initiatives are having the desired results.

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### Navy Has Initiated Steps in Developing Its Space Cadre, but It Has No Strategy or Focal Point

The Navy has initiated steps in identifying and developing its space cadre and has designated an advisor for space cadre issues. However, actions have been limited because it has not developed a space human capital strategy to provide direction and guidance for Navy actions. In addition, the Navy has not provided centralized leadership to develop the strategy and oversee implementation because it does not have a permanent management focal point.

The Navy has taken some actions to strengthen space cadre management, including providing funding for the space cadre advisor, an assistant advisor, and contract support in the fiscal year 2005 budget. In addition, the Navy has issued guidance requiring personnel placement officials to coordinate with the space cadre advisor before assigning space cadre personnel to increase the likelihood that they can be placed in appropriate positions to effectively use and develop their space expertise. The Navy has also developed guidance that directs promotion boards to consider space experience when assessing candidates for promotion. Also, senior Navy leaders are engaged in space cadre activities, according to DOD officials. Currently, the Navy has designated 711 active duty officers and about 300 officer and enlisted reserve members as its space cadre, based on their previous education and experience in space activities. Space cadre members serve in positions throughout the different functional areas in the Navy, such as surface warfare and naval aviation. The Navy has not identified active duty enlisted and civilians with space education and experience, although it is in the process of identifying such personnel.

The Navy has not completed a strategy for developing and managing its space cadre, even though the requirement for a strategy has been

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recognized in official guidance. In March 2002, the Navy issued a memorandum requiring the development of a space cadre strategy to guide the Navy in identifying its space requirements.<sup>14</sup> A Navy official said that it was not possible to complete a space cadre strategy without an overall Navy space policy that revised roles and responsibilities for space in the Navy. The Navy published its space policy in April 2004, which reiterated the need for a strategy for developing and managing Navy space personnel.<sup>15</sup> With the policy in place, the Navy plans to complete its strategy by October 2004, according to Navy officials.

Lacking a strategy, the Navy has not identified what key actions are needed to build its space cadre, how it intends to implement these actions, and when it expects the key actions to be completed. For example, the Navy has not determined the critical positions it needs to fill with space-qualified personnel, the numbers of personnel it has that should be in its space cadre to meet future needs for Navy and joint operations, or the funding required to implement any planned actions. Further, without an implementation plan that specifies actions, assigns responsibility, provides performance measures, and identifies resources needed, the Navy may not be able to develop and manage its space cadre so that it can effectively participate in Navy and joint space programs.

The Navy also lacks a permanent organizational focal point to develop and manage its space cadre and provide centralized leadership on space issues and ensure that the Navy's space initiatives are implemented and having the desired results. Further, the Navy views space as integrated throughout Navy operations and has not created a separate career field for space personnel. In 2002, the Navy appointed a space cadre advisor to enhance career planning and management of space cadre members; however, the position is advisory to members of the space cadre or others interested in working in space issues. Although the space cadre advisor plans to draft the Navy's space cadre strategy, the advisor has had no official responsibility for identifying or implementing actions needed to ensure the development and management of space professionals to meet DOD's future space requirements because the position has not been funded. For example, the space cadre advisor reports to two different offices in the Chief of Naval Operations on various space cadre issues.

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<sup>14</sup> Under Secretary of the Navy memorandum to the Navy and the Marine Corps on Naval Space Panel Implementation Planning, March 13, 2002.

<sup>15</sup> Secretary of the Navy Instruction 5400.39c, April 6, 2004.

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## Conclusions

The United States' increasing reliance on space-based technologies for the success of military operations highlights DOD's need to develop and maintain a cadre of space professionals who are well educated, motivated, and skilled in the demands of space activities. Although DOD has issued a space human capital strategy, the department does not have a plan that explains how it intends to achieve the goals in its strategy. Without such an implementation plan, developed jointly by the DOD Executive Agent for Space and the military services, DOD will not be in a sound position to effectively monitor and evaluate implementation of the strategy. Further, without clear performance measures, DOD and the services would be unable to assess whether actions intended to meet departmentwide goals and objectives are effective. Therefore, it is not clear that DOD can achieve the strategy's purpose of integrating the services' space personnel, to the extent practicable, into an integrated total force of well-qualified military and civilian personnel. Failure to achieve this could jeopardize U.S. primacy in this critical and evolving national security area.

The military services' efforts to implement initiatives to develop their space cadres vary and not all initiatives are linked to service strategies and integrated with DOD's overall strategy. Further, some of the initiatives are not fully developed and will require several years to complete. Because the Army and the Navy lack a strategy to provide direction and focus for their efforts to develop their space cadres and provide a basis to assess the progress of their initiatives, it is unclear whether they will have sufficient numbers of space-qualified professionals to meet future requirements in joint and service space planning, programming, acquisition, and operations. Furthermore, without an organizational focal point with responsibilities for managing and coordinating space cadre efforts, the Army and the Navy may not have the ability to develop and retain the appropriate number of personnel with the right skills to meet both their needs and the joint requirements of the national security space community. Until the Army and the Navy develop strategies synchronized with the department's overall strategy and establish a management approach to implementing their strategies, they may not be able to support the department's strategic goals and objectives and thus may undermine efforts to strengthen this important mission area.

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## Recommendations for Executive Action

We recommend that the Secretary of Defense take the following five actions:

- Direct the DOD Executive Agent for Space, in conjunction with the military services, to develop an implementation plan for the DOD space human capital strategy. The plan should include performance goals, milestones, resources needed, performance indicators, and an evaluation process.
- Direct the Secretary of the Army to develop a strategy for the Army's space cadre that incorporates long-term goals and approaches and is consistent with the DOD space human capital resources strategy.
- Direct the Secretary of the Army to establish a permanent organizational focal point for developing and managing the Army's space cadre.
- Direct the Secretary of the Navy to develop a strategy for the U.S. Navy's space cadre that incorporates the Navy's long-term goals and approaches and is consistent with the DOD space human capital resources strategy.
- Direct the Secretary of the Navy to establish a permanent organizational focal point in the U.S. Navy for developing and managing the service's space cadre.

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## Agency Comments and Our Evaluation

In commenting on a draft of this report, DOD generally agreed with our report and our recommendations. DOD's comments are reprinted in their entirety in appendix II. DOD also provided technical comments that we have incorporated as appropriate.

DOD partially concurred with our recommendation for the Army to establish a permanent organizational focal point for developing and managing the Army's space cadre. DOD stated that two different entities are involved with managing the Army's space cadre and the Army is in the process of determining whether a single organization will manage its space cadre. During our review, Army officials had differing views on the need to establish a single organizational focal point. They told us that the Army wants to decide whether to expand its space cadre beyond military officers before it designates management responsibilities for the space cadre. We believe that the Army should establish a single organizational focal point to develop its space cadre in a timely manner. This would help the Army to develop and retain the appropriate number of personnel with the right skills to meet Army and joint needs.

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We are sending copies of this report to interested congressional committees; the Secretary of Defense; the DOD Executive Agent for



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

If you or your staffs have any questions, please contact me at (202) 512-4300. Key contributors to this report are listed in appendix III.



Henry L. Hinton, Jr.  
Managing Director, Defense  
Capabilities and Management

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# Appendix I: Scope and Methodology

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To determine whether the Department of Defense's (DOD) space human capital strategy and management approach to implementing the strategy promote the development and integration of the military services' space cadres, we reviewed and analyzed the strategy and compared it to other human capital strategies, the human capital models in our prior reports, and the management principles contained in the Government Performance and Results Act of 1993. We discussed the strategy and its implementation with officials in the Office of the Under Secretary of Defense for Personnel and Readiness and the Assistant Secretary of Defense for Networks and Information Integration. We also discussed the strategy and its implementation with DOD's Executive Agent for Space and the officials from his office who led the development of the strategy. We assessed the actions taken to date to implement the strategy. We also discussed whether the strategy would effectively integrate the services' efforts with officials in each of the military services and at the National Reconnaissance Office. Specifically, for the military services, we interviewed officials and gathered information at the Air Force Space Command, Peterson Air Force Base, Colorado; the Army Office of the Deputy Chief of Staff for Operations and Plans, Arlington, Virginia; the Army Space and Missile Defense Command, Arlington, Virginia; the Navy Space Cadre Advisor, Arlington, Virginia; and the Office of Plans, Policies, and Operations, Headquarters, U.S. Marine Corps, Arlington, Virginia.

To assess the extent to which the military services have planned and implemented actions to develop and manage their space cadres, we analyzed documentation on strategies, initiatives, and other implementing actions at each service and discussed them with service officials. Locations visited to accomplish this objective were the Air Force Space Command, Peterson Air Force Base, Colorado; the Air Force Space Operations School, Colorado Springs, Colorado; the Army Office of the Deputy Chief of Staff for Operations and Plans, Arlington, Virginia; the Army Space and Missile Defense Command, Arlington, Virginia; the Army Force Development and Integration Center, Colorado Springs, Colorado; the Navy Space Cadre Advisor, Arlington, Virginia; and the Office of Plans, Policies, and Operations, Headquarters, U.S. Marine Corps, Arlington, Virginia. We also met with officials from the National Reconnaissance Office, but we did not assess its workforce plan because military personnel assigned to the office are drawn from the space cadres of the military services.

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We conducted our review from October 2003 through June 2004 in accordance with generally accepted government auditing standards. We did not test for data reliability because we did not use DOD generated data in our analysis of DOD's management approach.

# Appendix II: Comments from the Department of Defense



Office of the Under Secretary

DEPARTMENT OF THE AIR FORCE  
WASHINGTON DC 20330

27 JUL 2004

Mr. Raymond J. Decker  
Director, Defense Capabilities and Management  
United States Government Accountability Office  
Washington, DC 20548

Dear Mr. Decker,

This is the Department of Defense (DoD) response to the GAO draft report GAO-04-697, "DEFENSE SPACE ACTIVITIES: Additional Actions Needed to Implement Human Capital Strategy and Develop Space Personnel," dated June 16, 2004 (GAO Code 350453). The Department of Defense generally concurs with the report. Technical comments have been forwarded directly to the GAO staff for consideration. Comments to the recommendations are attached.

A handwritten signature in black ink, appearing to read "C. Robert Kehler".

C. ROBERT KEHLER, MAJ GEN, USAF  
Director, National Security Space Office

Attachment:  
DoD Comments to GAO Recommendations

GAO DRAFT REPORT – DATED JUNE 16, 2004  
GAO CODE 350453/GAO-04-697

“DEFENSE SPACE ACTIVITIES: Additional Actions Needed to Implement  
Human Capital Strategy and Develop Space Personnel”

DEPARTMENT OF DEFENSE COMMENTS  
TO THE RECOMMENDATIONS

**RECOMMENDATION 1:** The GAO recommended that the Secretary of Defense direct the DoD Executive Agent for Space, in conjunction with the Military Services, to develop an implementation plan for the DoD space human capital strategy. The plan should include performance goals, milestones, resources needed, performance indicators, and an evaluation process. (Page 24/GAO Draft Report)

**DOD RESPONSE:** Concur.

**RECOMMENDATION 2:** The GAO recommended that the Secretary of Defense direct the Secretary of the Army to develop a strategy for its space cadre that incorporated long-term goals and approaches and is consistent with the DoD space human capital resources strategy. (Page 24/GAO Draft Report)

**DOD RESPONSE:** Concur.

**RECOMMENDATION 3:** The GAO recommended that the Secretary of Defense direct the Secretary of the Army to establish a permanent organizational focal point for developing and managing its cadre. (Page 24/GAO Draft Report)

**DOD RESPONSE:** Partially Concur. Today, two different entities are involved with managing the space cadre. The Army is in the process of determining whether a single organization will manage its' space cadre. Until such a determination is made we can only partially concur.

**RECOMMENDATION 4:** The GAO recommended that the Secretary of Defense should direct the Secretary of the Navy to develop a strategy for its space cadre that incorporates long-term goals and approaches and is consistent with the DoD space human capital resources strategy. (Page 24/GAO Draft Report)

**DOD RESPONSE:** Concur.

Note: Page numbers in the draft report may differ from those in this report.

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**RECOMMENDATION 5:** The GAO recommended that the Secretary of Defense direct the Secretary of the Navy to establish a permanent organizational focal point for developing and managing its cadre. (Page 24/GAO Draft Report)

**DOD RESPONSE:** Concur.

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# Appendix III: GAO Contact and Staff Acknowledgments

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## GAO Contact

Margaret G. Morgan (202) 512-8975

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## Acknowledgments

In addition to the individual named above, Alan M. Byroade, John E. Clary, Raymond J. Decker, Linda S. Keefer, Renee S. McElveen, and Kimberly C. Seay also made key contributions to this report.

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