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General Accounting Office
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National Security and
International Affairs Division

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The Honorable Richard K. Armey
Majority Leader
House of Representatives

The Honorable John Kasich
Chairman, Committee on the Budget
House of Representatives

The Honorable Dan Burton
Chairman, Committee on Government Reform
and Oversight
House of Representatives

The Honorable Bob Livingston
Chairman, Committee on Appropriations
House of Representatives

Subject: Results Act: Observations on NASA's May 1997 Draft Strategic Plan

On June 12, 1997, you asked us to review the draft strategic plans submitted by the cabinet departments and selected major agencies for consultation with the Congress as required by the Government Performance and Results Act of 1993 (the Results Act). This letter is our response to that request concerning the National Aeronautics and Space Administration (NASA).

Objectives, Scope,
and Methodology

Our overall objective was to review and evaluate the latest version of NASA's draft strategic plan. Specifically we (1) assessed the draft plan's compliance with the act's requirements and its overall quality; (2) determined if NASA's key statutory authorities were reflected; (3) identified whether decisions about crosscutting functions and interagency involvement were included; (4) determined if the draft plan addressed major management problems; and (5) discussed NASA's capacity to provide reliable information about its operations and performance.

Our overall assessment of NASA's draft plan was generally based on our knowledge of NASA's operations and programs, our numerous reviews of the agency, and other existing information available at the time of our assessment. Specifically, the criteria we used to determine whether NASA's

draft strategic plan complied with the requirements of the Results Act were the Results Act itself supplemented by Office of Management and Budget (OMB) guidance on developing strategic plans (Circular A-11, part 2). To make judgments about the overall quality of the plan and its components, we used our own guidance (GAO/GGD-10.1.16, May 1997) for congressional review of the plans as a tool. To determine whether the plan contained information on interagency coordination and addressed management problems we previously identified, we relied on our general knowledge of NASA's operations and programs and the results of our previous reports. A list of our major products related to NASA operations is at the end of this letter. We conducted our assessment between June 13, and July 11, 1997, in accordance with generally accepted government auditing standards.

We based our assessment on the May 1997 draft strategic plan that NASA provided to the House of Representatives congressional staff team working with the agency. However, we did not examine other related planning documents or examine the strategic plans prepared by NASA's four enterprises: Mission to Planet Earth, Aeronautics and Space Transportation Technology, Human Exploration and Development of Space, and Space Science. NASA considers these enterprises to be its four principal business units, and each enterprise has developed its own strategic plan to supplement the overall NASA plan.

The Results Act anticipated that it may take several planning cycles to perfect the process and that the final plan would be continually refined as various planning cycles occur. Thus, our comments reflect a snapshot status of the plan at a given point in time. We recognize that developing a strategic plan is a dynamic process and that NASA is continuing to revise the draft with input from OMB, congressional staff, and other stakeholders.

Background

NASA conducts aeronautics and space research and develops, constructs, tests, and operates space vehicles. It conducts activities required for the exploration of space with manned and unmanned vehicles. The agency is currently undertaking programs such as the International Space Station to provide a permanently inhabited international space station in earth orbit, and the Mission to Planet Earth program to provide data relevant to the study of global change. NASA's annual budget is about \$13 billion and the agency employs about 20,000 workers located in headquarters and nine field centers across the country.

There is no more important element in results-oriented management than a strategic plan that defines what the agency seeks to accomplish, identifies strategies for achieving desired results, and provides the starting point for determining how well results-oriented goals and objectives are being achieved. Leading results-oriented organizations focus on the process of strategic planning, rather than on a strategic planning document. When done well, strategic planning is continuous, provides the basis for everything the organization does each day, and fosters communication between the organization and its customers and stakeholders.

NASA's efforts to develop a strategic plan and performance measurements predate the passage of the Results Act. In 1992, NASA revised its strategic planning process. Previous attempts at strategic planning did not fully consider budget realities and other external pressures on the agency and did not outline true goals and strategic outcomes. Consequently, these plans were not widely accepted. In 1994, NASA issued its first strategic plan under the new planning process and updated this plan in 1995 and 1996. Its fiscal year 1995 and 1996 accountability reports provided a summary of the agency's progress towards achieving the goals of its strategic plan.¹ NASA submitted its draft May 1997 version of its strategic plan to Congress to meet the consultative requirements of the Results Act.

The Results Act requires each federal agency to develop a strategic plan by September 30, 1997. Each plan is to include the following six elements: (1) a comprehensive mission statement covering the major functions and operations of the agency, (2) the agency's general goals and objectives, (3) a description of how the goals and objectives are to be achieved, (4) a description of how the performance goals included in the annual performance plan shall be related to the agency's general goals and objectives, (5) identification of key factors external to the agency and beyond its control that could affect achievement of general goals and objectives, and (6) a description of the program evaluations used to establish/revise strategic goals with a schedule for future program evaluations.

¹NASA was one of six pilot agencies selected by OMB to produce accountability reports. These reports cover the agency's financial activities for the fiscal year, including (1) an agency profile, (2) performance planning and assessment information, (3) management's discussion and analyses of controls required by the Federal Managers' Financial Integrity Act, (4) auditors' reports, and (5) financial statements.

Results in Brief

To its credit, NASA has been actively pursuing a strategic planning process since 1992—before enactment of the Results Act. Of the six elements required by the Act, four are included in the draft strategic plan—a mission statement, goals and objectives, strategies for achieving the goals and objectives, and a discussion of external factors (discussed in the context of NASA’s environmental assessment). Two of those four elements have weaknesses, some more significant than others. The other elements—relating annual performance goals to general goals and objectives and a description of program evaluations used to establish general goals and objectives and a schedule for future program evaluations—are not explained in enough detail in the draft plan itself.

The draft plan sets forth NASA’s primary legislative mandate, the National Aeronautics and Space Act of 1958 (the Space Act), as well as other key statutory authorities of the agency. For example, as discussed in the plan, the agency carries out its requirement to expand knowledge of the earth through the earth sciences, remote sensing, and upper atmospheric research activities of the Mission to Planet Earth enterprise.

Though many of NASA’s objectives are shared with or involve other agencies, the draft plan does not discuss what interagency coordination occurred to address the issues of duplication and overlap. The draft plan does note the importance of working with other agencies in achieving its objectives, and NASA officials stated that coordination has occurred at the program level. These efforts, though, are not discussed in the plan, and coordination at higher agency levels may be needed to ensure consistency of program objectives between agencies.

Major management problems facing the agency that could affect its ability to achieve its mission are not explicitly discussed in the draft plan. For example, problems with managing contracts, managing information technology, and developing a fully integrated accounting system are three long-standing problems the agency faces that are not discussed in the draft plan, even though the agency has recognized them as problems and has taken steps to address them.

Our work has shown that the agency’s capability to generate reliable information needed to measure the achievement of its strategic goals is questionable. Problems with the agency’s financial management system may make it difficult for the agency to accurately determine whether, for example, it is meeting its goal to reduce the costs of placing payloads into orbit. To evaluate the effectiveness of the agency’s efforts to achieve its

goals and objectives, the agency and the Congress will need complete, reliable, and timely performance, program cost, and management information.

NASA's Draft Strategic Plan Includes Four of Six Required Elements

Of the six elements required by the Results Act, four are included in NASA's draft strategic plan—a mission statement, goals and objectives, strategies to achieve the goals and objectives, and external factors. The discussion of two of those four elements in the draft plan needs to be improved. The other required elements—relating annual performance goals to general goals and objectives and a description of program evaluations used to establish goals and objectives and a schedule of future program evaluations—are not explained in enough detail in the draft plan itself. Table I shows the Results Act's required components and, where applicable, the corresponding sections in NASA's draft plan.

Table I: Strategic Plan Required Components and Corresponding Sections in NASA's May 1997 Draft Strategic Plan

Strategic plan required component	Corresponding sections in draft plan
1. Comprehensive mission statement	Vision, Mission and Strategic Outcomes
2. General goals and objectives for the major functions and operations of the agency	NASA's Strategic Roadmap to the Future Four Strategic Enterprises for a Single NASA
3. Description of how the goals and objectives are to be achieved	NASA's Strategic Roadmap to the Future Framework
4. Description of how the performance goals included in the annual performance plan shall be related to the general goals and objectives in the strategic plan.	NASA's Strategic Roadmap to the Future Four Strategic Enterprises for a Single NASA NASA's Crosscutting Processes Implementing Strategies to Revolutionize NASA
5. Identification of key factors external to the agency and beyond its control that could affect achievement of general goals and objectives.	Environmental Assessment
6. Descriptions of how program evaluations were used to establish/revise strategic goals with a schedule for future program evaluations.	Framework NASA's Crosscutting Processes Implementing Strategies to Revolutionize NASA

Source: The Results Act of 1993 and NASA's May 1997 draft Strategic Plan.

The following discusses the extent the draft plan meets the requirements of the Results Act and specific areas where the plan could be strengthened.

Mission Statement

The Results Act requires each agency's strategic plan to include a comprehensive mission statement covering the major functions and operations of the agency. OMB's guidance on preparing strategic plans gives the agencies discretion about whether the mission statement should lay out statutory authorities. OMB's guidance states that "the mission statement may include a concise discussion of enabling or authorizing legislation, as well as identification of the issues that Congress specifically charged the agency to address."

NASA's draft plan contains a comprehensive mission statement that covers the major functions and operations of the agency. The mission statement identifies three key missions for the agency. In short, NASA's mission is to

- advance and communicate scientific knowledge and understanding of the earth, the solar system, and the universe and use the environment of space for research;
- explore, use, and enable the development of space for human enterprise; and
- research, develop, verify, and transfer advanced aeronautics, space, and related technologies.

The draft plan notes that the agency's mission is based on NASA's primary legislative mandate, the National Aeronautics and Space Act of 1958 (the Space Act). NASA's mission statement is consistent with the Space Act, which gives NASA the responsibility for carrying out aeronautical and space activities for the general welfare and security of the United States. NASA is required to carry out this activity to satisfy objectives such as expanding knowledge of the earth and of phenomena in the atmosphere and space, developing and improving aeronautical and space vehicles, and preserving the role of the United States as a leader in aeronautical and space science and technology. NASA must also disseminate information about its activities and their results as widely as possible, encourage the fullest commercial use of space, and conduct its work in cooperation with other nations and groups of nations.

In our opinion, the clarity of NASA's mission statement as stated in the draft plan is clouded by the inclusion of several questions in the draft plan's introduction. In this introductory section, the NASA Administrator discusses the agency's strategic outlook. Seven questions are identified that the agency says it plans to use to "implement its mission and define its goals." However, these questions are not discussed in the context of the three stated missions of the agency. These questions are also identified in

the sections discussing the goals of each strategic enterprise. It is unclear from the Administrator's statement and the rest of the draft plan whether these seven questions are intended to drive the mission of the agency or are subparts of the agency's mission.

Goals and Objectives

The Results Act requires that strategic plans describe the agency's general goals and objectives, including outcome-oriented goals and objectives, for major agency functions. OMB's guidance on preparing strategic plans notes that the goals and objectives should be specific and permit assessment of whether the goals are being achieved.

NASA's draft plan includes a "strategic roadmap" that outlines agencywide goals for each of its three missions identified in the mission statement. Separate goals are listed for near-, mid-, and long-term time periods over the next 25 years and beyond. In addition to listing agencywide goals, the draft plan includes a "strategic roadmap" for each of the four major NASA strategic enterprises. Near-, mid-, and long-term objectives for each of the three agency missions are described for Mission to Planet Earth, Aeronautics and Space Transportation Technology, Human Exploration and Development of Space, and Space Science.

As required by the Results Act, most of the goals listed in NASA's draft plan elaborate on the agency's mission and are specific. The goals in the agencywide roadmap and the objectives in the enterprise strategic roadmaps are related to both outcomes (describing desired results) and outputs (describing levels of activity). For example, NASA cites improved space shuttle safety—an outcome-oriented goal—and the use of robotic explorers in space—an output-oriented goal—as near-term goals for the agency's mission to explore, use, and develop space.

While the goals outlined by NASA appear to meet the Results Act's requirements, progress towards some of the goals NASA has outlined may prove difficult to assess. For example, the goals to "characterize the earth system," "explore nature's processes in space," and "acquire and promote knowledge and technologies that promise to promote our quality of life" will be difficult to measure. As we recently reported, it is inherently difficult to measure the performance of research and development programs because the results are typically not apparent until many years later.² A large part of NASA's mission is to research, develop, and advance

²Measuring Performance: Strengths and Limitations of Research Indicators (GAO/RCED-97-91, Mar. 21, 1997).

knowledge. Developing effective performance measures for these program goals will be a major challenge for science agencies, including NASA.

One other challenge not addressed in the draft plan, but relevant to NASA and many other agencies, will be developing measurable goals and measures for agency missions that involve multiple federal agencies and/or private industry. The Results Act is based on the premise that budget decisions should be more clearly informed by expectations about program performance. Without clear and precise measures of agency-unique contributions, the Congress will be unable to determine the relative contributions of each agency, and this goal of the Results Act will not be realized. For example, the draft plan cites as a goal the reduction of the civil aircraft accident rate. The Federal Aviation Administration also shares this goal, and airlines and aircraft manufacturers will play a decisive role in the achievement of the goal.

Strategies to Achieve the Goals and Objectives and Needed Resources

The Results Act requires strategic plans to address how the goals and objectives are to be achieved, including a description of the operational processes, skills, technology, and other resources required to meet these goals and objectives. OMB guidance to the agencies on preparing strategic plans directs the agencies to include schedules for completing actions and to project staffing and funding levels. OMB guidance also requires strategic plans to discuss how they will assign accountability to managers and staff for achieving goals and how they will communicate goals throughout the agency.

NASA's draft plan describes in general terms the agency's strategy to achieve its goals and objectives.

- NASA's draft plan identifies four strategic enterprises through which it implements its mission and satisfies the needs of its external customers.
- The draft plan includes a "strategic roadmap" for each enterprise that defines the near-, mid-, and long-term goals NASA seeks to achieve in the three mission areas and discusses the roles that will be played by NASA's nine centers.³ The plan very briefly notes that other agencies have roles in these missions.
- Each center has a mission that provides a basis for building human resource capabilities and a physical infrastructure in direct support of

³NASA's nine centers are the Ames Research Center, Dryden Flight Center, Johnson Space Center, Stennis Space Center, Marshall Space Flight Center, Lewis Research Center, Kennedy Space Center, Langley Research Center, and Goddard Space Flight Center. In addition to the nine centers, the Jet Propulsion Laboratory also plays a role in implementing NASA's programs.

enterprise requirements. In addition, each center has responsibility as a “Center of Excellence” to maintain leadership responsibility for an area of technology as well as responsibility as a “Lead Center” to manage specific programs across the agency.

The draft plan loses some focus following the discussion of its four enterprises. The draft plan identifies four “crosscutting processes” (essentially key internal functions) that NASA uses to achieve its mission, support the strategic enterprises, and develop and deliver products and services to internal and external customers.⁴ In addition, the draft plan includes a section on “Implementing Strategies to Revolutionize NASA” that also discusses internal processes and functions, such as internal evaluation and contracting. The use of the term “implementing strategies” is unclear because it implies (under the terms of the Results Act) a discussion of how the agency will achieve its goals and objectives rather than changes to internal processes. We believe that it would be more helpful if this section of the plan was more clearly integrated with the discussion of internal crosscutting processes.

While the draft plan only briefly mentions the staff and resources required to carry out the plan, NASA officials noted that the plan states that it assumes a stable budget for NASA. They also stated that more detailed resource and budgetary information is contained in the agency’s budget documents.

Though the draft plan notes that communicating the agency’s direction is an objective of the managing strategically crosscutting process, it does not explicitly indicate how the goals of the plan will be communicated throughout the agency. Similarly, while the plan indicates that employees’ annual performance plans are used to ensure the alignment of individual activities with the goals of the strategic plan, and that the Administrator urges all employees to read the plan, it only briefly describes how accountability will be assigned. NASA officials noted that for several years the agency has had in place management processes—now included in NASA’s Strategic Management Handbook—that help ensure that each employee understands the goals and objectives of the agency and the way that activities contribute to the achievement of these goals and objectives. We believe that it would be helpful if the plan noted and explained the role

⁴The crosscutting processes include (1) generate knowledge, (2) communicate knowledge, (3) provide aerospace products and capabilities, and (4) manage strategically.

of the Strategic Management Handbook and other relevant plans and guidance.⁵

Relating Annual Performance Goals to General Goals and Objectives

The Results Act and OMB guidance require that strategic plans outline the type of performance goals to be included in the annual performance plan, the relation between those performance goals and the agency's strategic goals and objectives, and the relevance and use of annual performance goals in helping determine the achievement of general goals and objectives.

In the sections "NASA's Crosscutting Processes" and "Implementing Strategies to Revolutionize NASA" (i.e., internal agency functions), the draft plan indicates that the agency will review its performance against its goals and objectives. However, NASA's draft plan does not include a specific discussion or demonstrate a direct relationship between annual performance goals and the agency's general goals and objectives. A clear explanation of these issues would be helpful to show linkages among the several goals and questions discussed in the plan. For example:

- The description of each enterprise in the draft plan includes two sections labeled "Goals" and "Questions to Address." The draft plan does not fully explain the relationship between these various goals and questions with the agency goals and questions, nor does it indicate which goal or question will be measured to assess the agency's performance.
- NASA's draft plan includes a listing of "strategic outcomes" for the agency. The plan also includes a strategic roadmap for the agency and each strategic enterprise that identifies near-, mid- and long-term objectives for the agency. The draft plan, however, does not indicate whether performance will be measured against the strategic outcomes, agencywide goals, those of individual enterprises, or some combination of these.
- The draft plan does not clearly indicate whether near-term, mid-term, or long-term goals will be used for performance measurement.

According to NASA officials, the agency plans to measure performance against the near-term objectives outlined in the strategic roadmaps for each enterprise and the objectives of the crosscutting processes. The draft plan, however, does not clearly explain this and does not discuss how measuring performance at the enterprise level will allow an assessment of agencywide goals. NASA officials noted that a full discussion of the

⁵The NASA Strategic Management Handbook was developed to define and document how NASA does strategic planning, implementation planning, execution, and performance evaluation. The handbook also ties together the results of several management and policy studies.

methodology for evaluating performance will be included in the agency's annual performance plan.

Key External Factors

OMB guidance requires agencies to identify each key external factor, indicate its link with a particular goal, and describe how attainment of each goal would be affected. Rather than identifying key external factors, NASA's draft plan discusses the "external and internal environment" and "key assumptions" that could affect the agency's ability to implement its plan. For example, the draft plan assumes that NASA's budget will remain stable for the foreseeable future, international cooperation will be increasingly important in achieving NASA's mission, and the international space station will be successfully developed. The draft plan does not, however, explain how these assumptions are linked to particular goals of the agency and how these goals might be affected if assumptions are not met.

How Program Evaluations Were Used to Establish or Revise Strategic Goals and Schedule for Future Evaluations

The Results Act requires "a description of the program evaluations used in establishing or revising general goals and objectives, with a schedule for future program evaluations." OMB's guidance notes that the strategic plan should include an outline of the methodology to be used, issues to be addressed, and a schedule for future evaluations covering, at a minimum, the fiscal years prior to the next revision of the strategic plan.

The draft plan mentions that NASA plans to review performance against the goals and objectives contained in the strategic plan and states that the agency's Program Management Council and Capital Investment Council will continue to review programs and investments. The draft plan notes that it builds on three previous editions and identifies the plan's most recent changes and improvements. However, the draft plan does not explicitly discuss or demonstrate how program evaluations were used in establishing or revising agency goals and objectives, nor does it provide a schedule for future evaluations.

NASA officials explained that program evaluation has been extensively used since the agency's first strategic plan was issued in 1994. They stated that evaluating the strategic plan is part of its strategic management process and that this is discussed in its Strategic Management Handbook. We believe that it would be useful if NASA's plan cited these past efforts as well as the agency's plans for program evaluations.

Key Statutory Authorities Are Addressed

NASA's primary legislative mandate is contained in the Space Act. The act gives NASA the responsibility for aeronautical and space activities to be carried out for the general welfare and security of the United States. NASA is required to satisfy such objectives as expanding knowledge of the earth and of phenomena in the atmosphere and space, developing and improving aeronautical and space vehicles, and preserving the role of the United States as a leader in aeronautical space science and technology. NASA must disseminate information about its activities as widely as possible, encourage the fullest commercial use of space, and conduct its work in cooperation with other nations and groups of nations.

NASA's draft plan, including its mission statement, goals, and objectives, addresses the Space Act requirements. For example, as outlined in the plan, NASA carries out the statutory requirement to expand knowledge of the earth through the earth sciences, remote sensing, and upper atmospheric research activities of its Mission to Planet Earth enterprise. The requirement to develop and improve aeronautical and space vehicles is exemplified by the plan's references to the Aeronautics and Space Transportation Technology enterprise, whose goals include the reduction of accident rates of global civil aviation and the development of next-generation design tools and experimental aircraft. The requirement to preserve the role of the United States as a leader in aeronautical space sciences and technology is set out in the plan's references to the high-performance computing research objectives of the Aeronautics and Space Transportation enterprise.

In addition to the Space Act, several other important statutory requirements are addressed in more specific areas of the draft plan. For example:

- The National Aeronautics and Space Administration Authorization Act of 1988, as amended, required NASA's Administrator to construct a permanently manned space station to be used to conduct scientific, applications, and engineering experiments and establish a space base for other civilian and commercial space activities. NASA's draft plan includes assembly of the international space station as one of NASA's short-term goals for the 1997-2002 time period and aligns this goal with its overall mission of exploring, using, and enabling the development of space for human development.
- Section 102 of the fiscal year 1993 National Aeronautics and Space Administration Act directed the NASA Administrator to carry out an Earth Observing System program that addresses the highest priority

international climate change research goals. Activity in this area aligns with NASA's Mission to Planet Earth enterprise, which, according to the draft plan, "is pioneering the new discipline of Earth system science, with a near-term emphasis on global climate change." According to the draft plan, the agency plans to deploy the first series of Earth Observing System missions, including Landsat 7, in the 1997 through 2002 time period.

Statutory directives addressing specific aspects of biomedical research in space are set out in 42 U.S.C. 2487a-2487f. While these provisions are not specifically addressed in the draft plan, biomedical research in general is discussed in the Human Exploration and Development of Space enterprise section. A listing of NASA's key statutory authorities is provided in enclosure I.

Crosscutting Activities Are Not Discussed

Given the broad mission of many agencies, some of the general goals and objectives identified in their strategic plans will overlap or be shared with other agencies. In such cases, they may have a shared responsibility for defining and achieving these crosscutting objectives. Recognizing the importance of interagency coordination in such cases, OMB guidance requires that "appropriate and timely consultation occurs with other agencies during development of strategic plans with crosscutting goals and objectives."

Though several of NASA's objectives are shared with those of other agencies, the draft plan does not identify specific programs and activities that are crosscutting or similar to those of other federal agencies. Many of NASA's objectives, however, are shared with other agencies.

- The Human Exploration and Development of Space enterprise objective for space medicine research involves the National Institutes of Health.
- The Mission to Planet Earth enterprise objectives on long-term climate and ozone research involve the National Science Foundation, the Department of Energy, and the National Oceanic and Atmospheric Administration.
- The Aeronautics and Space Transportation Technology enterprise objectives to improve civil air safety and reduce air travel costs are shared with the Federal Aviation Administration.

The draft plan acknowledges in several places the need to work with other agencies (as well as private industry). However, the plan's discussions of crosscutting programs are brief and do not explain what, if any, coordination was done in developing goals and objectives. NASA officials

stated that each strategic enterprise coordinated its objectives with the relevant agencies at the program level. They noted that NASA officials participate in many crosscutting groups, like the Research Roundtable, where programmatic objectives are discussed. They also noted that for the last few years the agency has shared its strategic plan with other federal agencies. However, these activities, and the extent to which they addressed the issue of duplication and overlap, are not discussed in the plan. In addition, these activities are primarily at the program level. The plan could be enhanced by being more descriptive of how NASA priorities are consistent with the priorities of other agencies. Such interagency coordination may have to take place at the senior management level.

Major Management Challenges Are Not Explicitly Addressed

For several years, we have reported on many of the major management problems NASA faces in carrying out its mission. The agency faces many problems and challenges such as controlling costs of major programs like the space station and earth observing system, determining its environmental liability, overseeing space shuttle operations, and managing budget carryover balances. In response to our work and the work of others, including NASA's Inspector General, NASA has undertaken efforts to improve its mission-related management approaches.

NASA's draft plan does not comment on its major management challenges or the status of its reform efforts. This information could be beneficial to NASA and its stakeholders because major management problems could impede the agency's efforts to achieve its goals and objectives. Examples of three significant areas are (1) managing contracts, (2) managing information technology, and (3) developing a fully integrated accounting system. While the draft plan includes information technology as a specific objective of the managing strategically crosscutting process, specific objectives are not listed for contract management or improving the agency's accounting system.

Contract Management

In 1990, we identified NASA contract management as an area of high risk for fraud, waste, abuse, and mismanagement. When looked at functionally, NASA can be seen principally as a procurement organization. In a typical year, NASA uses between 85 percent and 90 percent of its budget for purchasing goods and services—about \$12 billion or more each year. NASA has made considerable progress in addressing its contract management problems, including restructuring contract award fees so that space system performance is emphasized, and changing how it shares risk under

research and development contracts. In our most recent high-risk report to NASA, we noted that NASA has effectively addressed many problems throughout the procurement cycle but that the agency still lacked relevant and reliable contract performance measurements as well as periodic performance reviews that would allow it to effectively oversee contracts.⁶ NASA indicated it would take action in this area.

Information Technology

NASA is one of the federal government's top information technology investors. The agency estimates that it will spend \$1.4 billion on information technology in fiscal year 1997. Since establishing the position of chief information officer (CIO) in February 1995, NASA has been working to correct information technology acquisition and management practices that had previously been criticized as fragmented, duplicative, and lacking adequate oversight. In August 1996, we reported on the CIO's activities to date, noting that NASA still faces significant challenges in managing its investment in information technology.⁷

The draft plan includes information technology management as an objective under its process for managing strategically.⁸ The draft plan, however, does not discuss

- how NASA plans to comply with the Clinger-Cohen Act of 1996, which calls for agencies to implement a framework of modern technology management based on practices followed by leading private-sector and public-sector organizations that have successfully used technology to dramatically improve performance and meet strategic goals;
- how the agency's new CIO management structure, which depends on the cooperation of NASA's diverse enterprises and field centers, will be able to provide strategic direction to information technology investments; and
- how NASA plans to address the "year 2000 problem" (which requires that computer systems be changed to accommodate dates beyond the year 1999) as well as any significant information security weaknesses—two issues that we have identified as high risk across the federal government.⁹

⁶NASA Procurement Contract Management Oversight (GAO/NSIAD-97-114R, Mar. 18, 1997).

⁷NASA Chief Information Officer: Opportunities to Strengthen Information Resource Management (GAO/AIMD-96-78, Aug. 15, 1996).

⁸The objective is to "ensure that information technology provides an open and secure exchange of information, is consistent with agency technical architectures and standards, demonstrates a projected return on investment, reduces risk, and directly contributes to mission success."

⁹The year 2000 problem refers to the potential for computer programs to generate incorrect results when using dates from the year 2000 and beyond to perform calculations, comparisons, or sorting.

Both the “year 2000 problem” and information security weaknesses could seriously undermine the integrity of NASA’s information systems if not adequately addressed.

Developing a Fully Integrated Accounting System

It is especially critical that NASA’s operations be supported by reliable information systems. Our past work has shown that NASA’s financial management systems do not provide complete, accurate, or timely information. For many years, NASA has reported its systems as either high risk or a material weakness in its Federal Managers’ Financial Integrity Act reports because its systems are center-unique and nonintegrated. The Chief Financial Officers Act of 1990 requires that each agency develop and maintain an integrated agency accounting and financial management system that provides for (1) the integration of accounting and budgeting information, (2) the development and reporting of cost information, and (3) the systematic measurement of performance—information needed to meet the requirements of the Results Act.

Although the draft plan states that the agency will tie its budget process to the strategic plans, it does not address the challenges NASA faces in implementing its new accounting system and the importance of this effort to (1) providing agency management and the Congress with better financial information and (2) allowing the agency to move to full cost accounting. In February 1995, NASA initiated the Integrated Financial Management Project, with a goal to establish an integrated financial management system for the agency. NASA plans for the system to provide a financial management core as well as other modules, such as budget, procurement, time and attendance, asset management, and travel, that it believes will meet the needs of all levels of decisionmakers. The implementation of the integrated financial management system has been delayed from October 1998 to sometime in 1999.

Capacity to Provide Reliable Information on Achievement of Strategic and Performance Goals Is Questionable

To evaluate the effectiveness of the goals and objectives contained in its strategic plan, NASA and its stakeholders need complete, reliable, and timely performance, program cost, and management information. NASA needs data to measure its performance and monitor the progress of its work. The plan does not address how NASA will collect and evaluate this data. Although NASA has prepared summary performance data in its prior accountability reports, being able to fully and effectively measure the progress towards the agency’s goals is contingent upon various events,

such as the implementation of the integrated financial management system.

NASA currently relies on several automated accounting systems to carry out its mission. Despite the lack of an integrated system, NASA was one of the few agencies to receive an unqualified audit opinion for the past 3 years. While this is a necessary and important first step to generating complete and accurate financial information, it is not a guarantee that useful financial information will be available for decisionmakers at all levels to measure performance and results and, in fact, NASA's financial reporting process could be improved. For example, in its 1996 audit, NASA's independent public accountant identified two reportable conditions dealing with this issue: (1) NASA's financial reporting process requires improvement to ensure the accuracy and completeness of its financial information and (2) NASA's accounting and financial reporting procedures require improvements to ensure that transactions are properly recorded and internal controls are properly designed and operating effectively.

NASA does not have all the information it needs to measure the costs associated with its proposed goals. Without an effective full-cost accounting system, it will be difficult for NASA to completely accumulate the cost of its activities and operations. NASA's draft plan, for example, calls for more affordable air and space travel and a reduction in the cost per pound of payloads from \$10,000 to \$1,000 per pound by the next decade. Cost accounting information is needed to help automate the agency's operations and link data results and all agency costs to major agency activities, budgets, accounts, and reports. NASA's 1996 accountability report describes the agency's plans for a full cost accounting system and states that cost accounting should also enhance its cost-effective mission performance by providing more complete cost information for improved and more fully informed decision-making and management.

NASA's plans to implement full cost accounting are contingent upon the timely completion of the Integrated Financial Management Project. Because the project is in its early phases, it is too soon to know whether progress toward a number of NASA's strategic goals can be measured in a meaningful way.

Agency Comments and Our Evaluation

We provided a draft of this report to NASA's Administrator for his review and comment. On July 18, 1997, the Acting Deputy Administrator provided

us with NASA's comments. (NASA's comments are in enclosure II.) He stated that our report reflected a comprehensive analysis of the strategic plan, and that NASA intended to incorporate a number of changes into the final version of the plan. However, he stated that NASA firmly believes that its strategic plan meets all six elements of the Results Act, as well as the requirements set forth in OMB Circular A-11. He further stated that our addition of suggested "tactical sections" and other reporting requirements—such as management challenges—go well beyond Results Act requirements. NASA's comments focused on the extent to which its draft plan (1) relates annual performance goals to general goals and objectives, (2) uses program evaluations to establish/revise strategic goals and a schedule for future program evaluations, (3) communicates goals throughout the agency, (4) measures performance against established goals, (5) identifies crosscutting issues, and (6) highlights major management issues. Our evaluation of each of these points is as follows.

Regarding the relationship between annual performance goals and general goals and objectives, NASA commented that the agency will measure performance against the goals and objectives in the Strategic, Enterprise, and Annual Performance Plans; use development cycle times, cost, launch rate to measure performance; and measure the outcomes of NASA activities focused on "generating communicating knowledge". We agree that a building block approach is useful in relating annual objectives and goals to general objectives and goals. However, OMB guidance on strategic planning states that the strategic plan should outline the type, nature, and scope of the performance goals; the relationship between the performance goals and the general goals and objectives; and the relevance and use of performance goals in helping determine the achievement of general goals and objectives. NASA's draft plan does not provide a clear explanation of these points.

Concerning program evaluations, NASA commented that responsibility for assessing performance and investments of capital and resources is vested in various intra-agency councils. Further, the Acting Deputy Administrator stated that the Strategic Management Handbook addresses evaluation processes and the Senior Management's role in the overall performance evaluation process. The point expressed in our report centers on the draft plan's lack of (a) a discussion on how program evaluations were used in establishing and revising general goals and objectives, and (b) a schedule for future evaluations, both key requirements of the Results Act. Regarding NASA's response that its Handbook contains the schedule for reviews, we note that our analysis of the elements in NASA's draft plan is based on

information contained solely in the plan itself, and not in other documents—which are beyond the scope of our review.

In commenting on NASA's efforts to communicate the agency's direction, the Acting Deputy Administrator pointed to several initiatives as illustrative, such as the alignment of employees' activities with agency goals, and the Administrator's urging of NASA employees to read the plan. Our report acknowledges NASA's effort to integrate employee contributions to the plan and has been revised to reflect the Administrator's action. As previously noted, our analysis of the elements in NASA's draft plan is based on information contained solely in the draft plan itself, and not in other documents. We continue to believe that (a) the draft plan, by itself, only provides a brief description of how accountability will be assigned and (b) it would be helpful if the plan noted and explained the role of other relevant NASA guidance which agency officials reference as providing further details.

In reference to our discussion on measuring performance against established goals, the Acting Deputy Administrator said that it is incorrect to conclude that NASA's draft plan does not indicate whether performance will be measured against the strategic outcomes, agencywide goals, those of individual enterprises, or some combination of these. He referenced the statement in the draft plan that said that performance will be measured against the goals and objectives contained in the strategic plan, the Enterprise Strategic Plans, and the Annual Performance Plan. Our position on this issue remains unchanged as NASA's response provides no additional information. We continue to believe that a clear explanation to show linkages would be helpful in NASA's plan.

Responding to our inclusion of crosscutting issues in this report, NASA noted that the Results Act does not explicitly require agencies to address crosscutting activities in their Strategic Plans. Reporting on this issue was specifically identified by our requesters. In addition, we note that crosscutting issues are addressed in OMB Circular A-11 in the context of consultations with other agencies; and that such consultations be completed prior to the development of strategic plans with crosscutting goals and objectives. In our opinion, recognition of having completed such coordination activities would be helpful to the Congress as such information provides perspective to agency funding requests that involve collaborative projects.

In commenting on the section of our report discussing major management challenges and the status of NASA's reform efforts, the Acting Deputy Administrator indicated that it is NASA's position that the Results Act does not require agencies to address specific management challenges in their strategic plans. He indicated that such information should be addressed in more detailed implementation plans. Reporting on this issue was specifically identified by our requesters. Moreover, we believe some of these challenges could affect the extent to which NASA can achieve its goals and objectives in an effective and timely manner. Therefore, we believe that their identification in the plan would be helpful.

NASA also made several suggestions to improve the technical accuracy of this report. We made changes where appropriate.

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after its issue date. At that time, we will send copies to the Ranking Minority Members of your Committees and to the Chairmen and Ranking Minority Members of other Committees that have jurisdiction over NASA activities; the Administrator of NASA; and the Director, Office of Management and Budget. We will send copies to others on request.

Please contact me at (202) 512-4841 if you or your staffs have any questions concerning this letter. Major contributors to this letter are listed in enclosure III.



Allen Li
Associate Director
Defense Acquisitions Issues

Enclosures - 3

Key Statutory Authorities of the National Aeronautics and Space Administration

15 U.S.C. 5522 Requires the National Aeronautics and Space Administration (NASA) to conduct basic and applied research in high-performance computing, particularly in the field of computational science, with emphasis on aerospace sciences, earth and space sciences, and remote exploration and experimentation.

15 U.S.C. 5631 Directs the Administrator of NASA and the Secretary of Defense to continue and to enhance programs of remote sensing research and development through experiments, technology development, and cooperative research.

42 U.S.C. 2451 Sets out general objectives of NASA aeronautical and space activities, as well as specific objectives in the areas of commercial use of space; ground propulsion systems research and development; advanced automobile propulsion systems; and bioengineering research, development, and demonstration programs.

42 U.S.C. 2465d, 2465f Requires NASA to purchase required launch services for its primary payloads from commercial providers. NASA space shuttles may only accept commercial payloads when the NASA Administrator determines that the payload requires the unique capabilities of the shuttle or a space shuttle payload launch is important for national security or foreign policy purposes.

42 U.S.C. 2473 Sets out general responsibilities of the NASA Administrator, as well as specific responsibilities in the areas of ground propulsion, solar heating, and cooling technologies.

42 U.S.C. 2481 Authorizes and directs the NASA Administrator to develop and carry out a comprehensive program of research, technology, and monitoring of upper atmospheric phenomena.

42 U.S.C. 2486c Requires the NASA Administrator to establish and maintain a national space grant college and fellowship program.

42 U.S.C. 2487a-2487f Requires the NASA Administrator and the Director of the National Institutes of Health to establish a working group to coordinate biomedical research activities related to a microgravity environment and to also establish biomedical grant and research fellowship programs. Requires the NASA Administrator to create and maintain a national electronic data archive for biomedical research data obtained from space-based experiments. Requires NASA and the Federal

Emergency Management Agency, the Office of Foreign Disaster, and the Surgeon General of the United States to jointly create and maintain an international telemedicine satellite consultation capability to support emergency medical services in disaster-stricken areas.

42 U.S.C. 5553 Requires membership of a NASA Associate Administrator on the Solar Energy Coordination and Management Project. Gives NASA responsibility to cooperate with the project in the areas of management capability and technology development.

47 U.S.C. 721 Sets out responsibilities of NASA related to the communications satellite system, including advice on technical characteristics, research and development, and the provision of launching services.

Permanently Manned Space Station

P.L. 100-147, Title I, secs. 106-112, Oct. 30, 1987, 101 Stat. 863-865, as amended, and P.L. 102-195, sec. 16, Dec. 9, 1991, 105 Stat. 1614 Requires the NASA Administrator to construct a permanently manned space station to be used to (a) conduct scientific, applications, and engineering experiments; (b) service, rehabilitate, and construct satellites and space vehicles; (c) develop and demonstrate commercial products and processes; and (d) establish a space base for other civilian and commercial space activities.

National Aeronautics and Space Capital Development Program (Space Station)

P.L. 100-685, Title I, sec. 101, Nov. 17, 1988, 102 Stat. 4083 Expands on purposes of the manned space station (as set out in P. L. 100-147, as amended) to also include the requirement that the space station serve as an outpost for further exploration of the solar system.

National Aero-Space Plane Program

P.L. 101-611, Title I, sec. 116, Nov. 16, 1990, 104 Stat. 3202 Requires the NASA Administrator and the Secretary of Defense to jointly pursue a National Aero-Space program whose objective shall be the development and demonstration, by 1997, of a primarily air breathing single-stage-to-orbit and long-range hypersonic cruise research flight vehicle.

Enclosure I
Key Statutory Authorities of the National
Aeronautics and Space Administration

Earth Observing System Program

P.L. 102-588, Title I, Sec. 102(g), Nov. 4, 1992, 106 Stat. 5111

Requires the NASA Administrator to carry out an Earth Observing System program that addresses the highest priority international climate change research goals as defined by the Committee on Earth and Environmental Sciences and the Intergovernmental Panel on Climate Change.

Comments From the National Aeronautics and Space Administration

National Aeronautics and
Space Administration
Office of the Administrator
Washington, DC 20546-0001



JUL 18 1997

Mr. Allen Li
Associate Director
Defense Acquisition Issues
National Security and International Affairs Division
United States General Accounting Office
Washington, DC 20548

Dear Mr. Li:

Thank you for the opportunity to comment on the July 15, 1997, draft version of the report which was developed to evaluate NASA's draft Strategic Plan. NASA has recently been acknowledged as a model in the area of strategic planning in the Federal government by members of the Senate and the Office of Management and Budget. However, the Agency welcomes opportunities to improve the quality of our Strategic Plan. NASA has reviewed the report and offers the following comments. It should be noted that due to the time constraints imposed by GAO for our review, our comments address only factual errors in the report and major substantive issues.

Now on p. 2.

- Page 3 states: "NASA conducts aeronautics and space research and develops, constructs, tests, and operates aeronautical and space vehicles."

NASA Response: NASA does not operate aeronautical vehicles in the sense of an operations mission (e.g., Shuttle). We request that the word "aeronautical" be deleted from the last part of the sentence.

Now on pp. 4 and 10-11.

- Pages 5, 6 and 15 state that the element - relating annual performance goals to general goals and objectives is not explicitly addressed in the draft Plan.

NASA Response: Page 38 of the draft Plan explicitly addresses the relationship of NASA's annual performance goals to general goals and objectives. Specifically, this section states: "We will review performance against the goals and objectives contained in this plan, Enterprise Strategic Plans, and NASA's Annual Performance Plan. The metrics we will use to assess our performance include development cycle time, cost, and launch rate. We will also measure the outcomes of NASA activities focused on generating communicating knowledge, and the results of development, infusion, and commercialization of new technologies." Accordingly, NASA requests that the report reflect that the Agency's Strategic Plan does, in fact, address the relationship of NASA's annual performance goals to general goals and objectives.

Now on pp. 4 and 11-12.

- Pages 5, 17 and 18 state that the sixth element, a description of program evaluations used to establish/revise strategic goals with a schedule for future program evaluations, is not explicitly addressed in the draft Plan.

NASA Response: Page 38 of the draft Plan explicitly describes the way NASA will implement its strategy to "...measure our performance and communicate our results." This section addresses the Program Management Council's responsibility to assess the performance of our programs and the Capital Investment Council's responsibility to

Enclosure II
Comments From the National Aeronautics
and Space Administration

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assess investments of capital and associated resources. NASA's Strategic Management Handbook addresses these evaluation processes as well as the overall performance evaluation process of the NASA Senior Management Council in greater detail. In addition, the Handbook contains the schedule for such reviews. Regarding changes to the Plan as a result of management reviews, pages 4 and 5 of the Plan, provide a detailed summary of changes that have been made to the Plan as a result of management and program evaluations. Accordingly, NASA requests that the subject report reflect that the Agency's Strategic Plan does, in fact, address all six elements and that the language indicating that the Plan does not address performance evaluation be deleted.

Now on pp. 9-10.

- Page 14 states: "Though the draft Plan notes that communicating the agency's direction is an objective of the managing strategically crosscutting process, it does not explicitly indicate how the goals will be communicated throughout the agency."

NASA Response: Page 39 of the Plan discusses our strategy to ensure alignment of individual activities with the goals by having all employees work with their supervisors to outline the employees' contributions to the Plan. These contributions will then be included in each employee's individual Performance Plan. This is one strategy for communication of the Agency's Strategic Plan. In addition, the NASA Plan is distributed to all Agency employees and is also available for review on the NASA Homepage. On Page 5 of the draft Plan, the NASA Administrator urges all employees to read the Plan and look for ways they can support the accomplishments of the Agency's goals for the future. Accordingly, we request that the first 2 sentences on the last paragraph on page 14 be deleted.

Now on p. 11.

- Page 16 states: "The draft Plan, however, does not indicate whether performance will be measured against the strategic outcomes, agencywide goals, those of individual enterprises, or some combination of these."

NASA Response: This is incorrect. On page 38, the draft NASA Strategic Plan states "We will review performance against the goals and objectives contained in this Plan, the Enterprise Strategic Plans, and NASA's Annual Performance Plan." Accordingly, we request that the statement on page 16 be deleted.

Now on pp. 13-14.

- Pages 20-21 provide a summary of crosscutting activities. GAO recommends that additional language be added to further address NASA's crosscutting activities with other agencies.

NASA Response: GPRA does not explicitly require agencies to address crosscutting activities in their Strategic Plans. NASA has, however, addressed our cooperative activities with other agencies in the Strategic Enterprise sections of the NASA Plan. Given the great diversity in the missions of the NASA Enterprises, it is appropriate for program level interagency alliances to be developed and implemented at the Enterprise level.

Agency Management provides oversight and strongly supports these alliances but should not be the point of contact for the alliances. NASA intends to expand on our oversight and associated discussions on cooperation with other agencies as their

Enclosure II
Comments From the National Aeronautics
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respective Strategic Planning processes reach a more mature state. This will be accomplished over the next 12 months. Based on the above, we request that this section be deleted.

- Page 21 states that the Aeronautics and Space Transportation Technology (ASTT) Enterprise has objectives that "overlap" those of the Federal Aviation Administration (FAA).

NASA Response: Based on our collaborative activities with FAA, we have concluded that there are some shared objectives, but there is no overlap. We request that the ASTT statement on page 21 be deleted.

- Page 22 states: "NASA's draft Plan does not comment on its major management challenges or the status of its reform efforts."

NASA Response: It is NASA's position that GPRA does not require agencies to address specific management challenges in their Strategic Plans. These issues should be addressed in more detailed implementation plans. These issues will be addressed in the Agency's various Functional Staff/Office Implementation Plans. Accordingly, we request that the entire section dealing with management challenges be deleted from the report.

- Page 25 lists the core elements of IFMP.

NASA Response: If this section remains in the report, asset management should be added to the list.

GAO's report on the draft NASA Strategic Plan reflects a comprehensive analysis of the document. NASA intends to incorporate a number of GAO's recommendations into the final version of the Plan, which we hope to publish in the very near future. However, it should be noted that NASA firmly believes that its draft Strategic Plan meets all six elements of the GPRA and A-11 requirements. We are concerned that the addition of the suggested tactical sections and other GAO reporting requirements, such as management challenges and compliance with the Clinger-Cohen Act, go well beyond the specific GPRA requirements. These additions will dilute the strategic nature of the document, significantly increase its length, and decrease its overall readability and usefulness as a Strategic Plan. It is requested that GAO make the above changes to the subject report prior to its submission to Congress.

If you have any questions regarding NASA's recommendations or would like to discuss them further, please contact Gary Steinberg, in the Office of Policy and Plans, on 202/358-4552.

Sincerely,


J. R. Dailey
Acting Deputy Administrator

Major Contributors to This Report

National Security and
International Affairs
Division, Washington,
D. C.

Frank Degnan
Jerry Herley
David C. Trimble

Office of General
Counsel, Washington,
D. C.

William Woods
Maureen A. Murphy

Accounting and
Information
Management Division,
Washington, D. C.

Elizabeth M. Mixon
John DeFerrari

Related GAO Products

Space Station: Cost Control Problems Continue to Worsen ([GAO/T-NSIAD-97-177](#), June 18, 1997).

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