

GAO

Testimony

Before the Subcommittee on Government Efficiency,
Financial Management, and Intergovernmental Relations,
Committee on Government Reform, House of
Representatives

For Release on Delivery
Expected at 2:00 p.m. EDT
Wednesday, May 19, 2004

**NATIONAL
AERONAUTICS AND
SPACE ADMINISTRATION**

**Significant Actions Needed
to Address Long-standing
Financial Management
Problems**

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Highlights of [GAO-04-754T](#), a testimony before the Subcommittee on Government Efficiency, Financial Management, and Intergovernmental Relations, Committee on Government Reform, House of Representatives

Why GAO Did This Study

The Subcommittee asked GAO to testify on the status of the National Aeronautics and Space Administration's (NASA) financial management reform efforts. NASA faces major challenges that if not addressed, will weaken its ability to manage its highly complex programs. NASA has been on GAO's high-risk list since 1990 because of its failure to effectively oversee its contracts and contractors, due in part to the agency's lack of accurate and reliable information on contract spending. GAO's statement focused on (1) how NASA's history of clean audit opinions served to mask the true extent of the agency's financial management difficulties; (2) the results of NASA's fiscal year 2003 financial statement audit, which are a departure from the fiscal year 2002 results; (3) NASA's effort to implement an integrated financial management system; and (4) the challenges NASA faces in reforming its financial management organization.

Although GAO does not make specific recommendations in this statement, GAO previously made several recommendations to improve NASA's acquisition and implementation strategy for its financial management system. While NASA ultimately agreed to implement all of the recommendations, it disagreed with most of the findings—stating that its acquisition and implementation strategy had already addressed GAO's concerns.

www.gao.gov/cgi-bin/getrpt?GAO-04-754T.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Gregory D. Kutz at (202) 512-9095 or kutzg@gao.gov.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Significant Actions Needed to Address Long-standing Financial Management Problems

What GAO Found

NASA faces major challenges in fundamentally reforming its financial management organization and practices. While some areas needing reform relate to automated systems, automation alone is not sufficient to transform NASA's financial management culture. Specifically, NASA needs to fully integrate its financial management operations with its program management decision-making process. Until that occurs, NASA risks addressing the symptoms of its problems without resolving the underlying causes. These causes include an agency culture that has not fully acknowledged the nature and extent of its financial management difficulties and does not link financial management to program implications. Historically, NASA management has downplayed the severity of its problems and has viewed the agency's financial operation as a function designed to produce clean financial audit opinions instead of viewing it as a tool that supports program managers in making decisions about program cost and performance.

GAO's work has identified several areas of concern:

- **Clean financial audit opinions masked serious financial management problems.** Financial audits of NASA during the late 1990s did not provide an accurate picture of the agency's financial management operations, and instead masked serious problems that continue to exist today, including significant internal control weaknesses and systems that do not comply with federal standards.
- **The new financial management system did not address all key stakeholder needs.** GAO reported in April 2003 that NASA designed and implemented the new system's core financial module without involving key stakeholders, including program managers, cost estimators, and the Congress.
- **NASA did not follow key best practices in implementing its new financial management system.** GAO reported in April 2003 and again in November 2003 that the new system may do less and cost more than NASA expects because the agency did not follow key best practices for acquiring and implementing the system. For example, NASA acquired and deployed system components without an enterprise architecture and lacked discipline in its cost estimating processes.
- **The new financial management system did not provide key external reporting capabilities.** GAO reported in November 2003 that the system would not generate complete and accurate information necessary for external reporting of NASA property and budgetary data.

Finally, if NASA is to reap significant benefits from its new financial management system, it must transform its financial management organization into a customer-focused partner in program results. This will require sustained top leadership attention combined with effective organizational alignment, strategic human capital management, and end-to-end business process improvement.

Mr. Chairman and Members of the Subcommittee:

Thank you for the opportunity to discuss the financial management challenges facing the National Aeronautics and Space Administration (NASA). Since its inception in 1958, NASA has undertaken numerous programs—involving earth and space science, aerospace technology, human space flight, and biological and physical research—that have resulted in significant scientific and technological advances, enhancing the quality of life on earth. In recent years, NASA has experienced a number of setbacks with its programs and operations, including massive cost overruns associated with the International Space Station and, with the Columbia tragedy, the need for the agency to develop return-to-flight strategies and mitigate the impact of the loss of the shuttle on the construction of the space station.

On January 14, 2004, President Bush outlined a bold new vision for U.S. space exploration that will set a new course for NASA. However, to successfully execute this new vision, NASA must address a number of long-standing financial management challenges that threaten NASA's ability to manage its programs, oversee its contractors, and effectively allocate its budget across its numerous projects and programs. In fact, since 1990 we have identified NASA's contract management as an area of high risk, in part because the agency lacked effective systems and processes for overseeing contract spending and performance. NASA has begun taking action to address many of these challenges through its effort to implement a new integrated financial management system; however, many of NASA's financial management problems are deeply rooted in an agency culture that has not fully acknowledged the nature and extent of its financial management difficulties and does not view finance as intrinsic to the agency's program management decision process.

My testimony today will focus on the results of our recent work related to NASA's financial management challenges and the agency's efforts to implement an integrated financial management system. Specifically, I will discuss (1) how NASA's history of clean audit opinions served to mask the true extent of the agency's financial management difficulties; (2) the results of NASA's fiscal year 2003 financial statement audit, which are a departure from the fiscal year 2002 results; (3) NASA's current effort to implement an integrated financial management system; and (4) the challenges NASA faces in reforming its financial management organization. We have performed work and issued several reports in response to legislative mandates and at the request of other interested committees. We also

reviewed the reports of NASA's Office of Inspector General and the independent public accounting firms that audited NASA's financial statements for fiscal year 2003 and for several previous years. With the exception of NASA's financial statements for fiscal year 2002, in which we performed a limited-scope review of the financial statement audit performed by NASA's contracted independent public accountant (IPA), we did not review the IPA's underlying audit work. We performed all work in accordance with generally accepted government auditing standards. My statement today is drawn from the findings and conclusions in GAO's, NASA's Office of Inspector General's, and the independent auditors' reports.

Summary

NASA has fundamental problems with its financial management operations that not only affect its ability to externally report reliable information, but more important, hamper its ability to effectively manage and oversee its major programs, such as the space station and the shuttle program. NASA's financial audits during the 1990s masked serious problems with its financial management operations that continue today. Specifically, from 1996 through 2000, NASA was one of the few agencies to be judged by its independent auditor at the time, Arthur Andersen, as meeting all of the federal financial reporting requirements. However, our work at NASA during this same period told a different story. During this period, we issued a wide range of reports that detailed the agency's difficulties associated with (1) overseeing its contractors and their financial and program performance, (2) controlling program costs and producing credible cost estimates, and (3) supporting the amounts that it had reported to the Congress as obligated against statutory spending limits for the space station and related space shuttle support. We also concluded, based on work we performed related to a misstatement in NASA's fiscal year 1999 financial statements, that Arthur Andersen's work did not meet professional standards, and we questioned NASA management's and its auditor's determination that the agency's systems substantially complied with federal standards.

The results of NASA's fiscal year 2003 financial statement audit confirm that NASA's financial management problems continue today. NASA's independent auditor, Pricewaterhouse Coopers (PwC), disclaimed an opinion on NASA's fiscal year 2003 financial statements; reported material weaknesses in internal controls; and for the third straight year, concluded,

just as we reported in November 2003,¹ that the agency's new financial management system did not comply with the requirements of the Federal Financial Management Improvement Act of 1996 (FFMIA).² Although NASA attributed the auditor's disclaimer of opinion to the agency's implementation of a new financial management system, many of the reported problems were long-standing issues not related to implementation of the new system.

Recognizing the importance of successfully implementing an integrated financial management system, in April 2000, NASA began an effort known as the Integrated Financial Management Program (IFMP). Through IFMP, NASA has committed to modernizing its business processes and systems in a way that if implemented properly, will introduce interoperability and thereby improve the efficiency and effectiveness of its operations as well as bring the agency into compliance with federal system requirements. NASA has also committed to implementing IFMP within specific cost and schedule constraints. In 2003, we issued five reports³ outlining the considerable challenges NASA faces in meeting its IFMP commitments and providing NASA the necessary tools to oversee its contracts and manage its program. For example, in April 2003, we reported that NASA had deferred addressing the needs of key system stakeholders,⁴ including program

¹U.S. General Accounting Office, *Business Modernization: NASA's Integrated Financial Management Program Does Not Fully Address Agency's External Reporting Issues*, GAO-04-151 (Washington, D.C.: Nov. 21, 2003).

²FFMIA requires auditors to report whether agencies' financial management systems comply with federal financial management systems requirements, applicable federal accounting standards (U.S. generally accepted accounting principles), and the U.S. Government Standard General Ledger at the transaction level.

³U.S. General Accounting Office, *Business Modernization: Improvements Needed in Management of NASA's Integrated Financial Management Program*, GAO-03-507 (Washington D.C.: Apr. 30, 2003); *Information Technology: Architecture Needed to Guide NASA's Financial Management Modernization*, GAO-04-43 (Washington, D.C.: Nov. 21, 2003); *Business Modernization: Disciplined Processes Needed to Better Manage NASA's Integrated Financial Management Program*, GAO-04-118 (Washington, D.C.: Nov. 21, 2003); *Business Modernization: NASA's Challenges in Managing Its Integrated Financial Management Program*, GAO-04-255 (Washington, D.C.: Nov. 21, 2003); and GAO-04-151.

⁴NASA defined those in the financial accounting arena as the system's users who, under NASA's plan, would determine the system's requirements, guide its implementation, and define and measure its success. Those who would benefit from the system's new capabilities were identified as stakeholders. Under NASA's plan, they would be the ultimate beneficiaries of the system improvements, but would not have a role in setting requirements or measuring and determining the success of the system's implementation.

managers and cost estimators, and was not following key best practices for acquiring and implementing the system. We also reported that NASA lacked the disciplined requirements management and testing processes needed to reduce the risk associated with its effort to acceptable levels. Therefore, NASA did not have reasonable assurance that the program would meet its cost, schedule, and performance objectives. Then, in November 2003, we reported that NASA (1) acquired and deployed IFMP system components without an enterprise architecture, or agencywide modernization blueprint, to guide and constrain program investment decisions; (2) did not use disciplined cost estimating processes or recognized best practices in preparing its life cycle cost estimates; and (3) had delayed implementation of many key external reporting capabilities. We made a number of recommendations in these reports to improve NASA's acquisition and implementation strategy for IFMP. While NASA ultimately agreed to implement all of our recommendations, it disagreed with most of our findings—stating that its acquisition and implementation strategy had already addressed many of our concerns.

Finally, NASA faces significant challenges in overcoming its financial management difficulties and reforming its financial management operations. For example, NASA's independent auditor, PwC, attributed many of the agency's financial management problems to a lack of understanding by NASA's staff of federal reporting requirements. In addition, over the past 4 years, we have issued numerous reports highlighting NASA's financial management difficulties and making recommendations for improvement. However, NASA management has been slow to implement these recommendations and in many cases has denied the existence of the problems we and others have identified—instead attributing the agency's difficulties to the auditor's sampling methodology or the auditor's lack of understanding of NASA's overall operations. Until NASA fully acknowledges the nature and extent of its financial management difficulties and better integrates the agency's financial management operation with its program management decision process, NASA will continue to face many of the same financial management problems discussed in my testimony today.

Clean Financial Audit Opinions Masked Serious Financial Management Problems

NASA's financial audits during the 1990s masked serious problems with its financial management operations that continue today. Specifically, from 1996 through 2000, NASA was one of the few agencies to be judged by its independent auditor, Arthur Andersen, as meeting all of the federal financial reporting requirements. That is, NASA was one of the few agencies to receive an unqualified, or "clean," opinion on its financial statements, with no material internal control weaknesses noted and with financial management systems that were reported to be in substantial compliance with the requirements of FFMIA. FFMIA, building on previous financial management reform legislation, stresses that agencies need to have systems that provide managers with the reliable, timely, and accurate financial information that they need to ensure accountability on an ongoing basis, as well as to make informed decisions on investing resources, managing costs, and overseeing programs. Thus, the auditor's report implied that NASA could not only generate reliable information once a year for external financial reporting purposes but also could provide the kind of information needed for day-to-day management decision making. However, as others and we have reported, the independent auditor's reports did not provide an accurate picture of NASA's financial management systems and failed to disclose pervasive financial management problems that existed at NASA then and continue today. Ultimately, these unqualified opinions and positive reports on NASA's internal controls and systems served only to mask the serious financial management problems that existed at NASA throughout this period.

- First in 1990 and then in subsequent years, we identified contract management as an area at high risk because of NASA's inability to (1) oversee its contractors and their financial and program performance and (2) implement a modern, integrated financial management system, which is integral to producing accurate and reliable financial information needed to support contract management.⁵ During this period, we also issued a wide range of reports that detailed the agency's

⁵At that time, we began a special effort to review and report on the federal program areas that our work had identified as high risk because of vulnerabilities to waste, fraud, abuse, and mismanagement. We first issued our *High-Risk Series* in December 1992 and have continued to include NASA's contract management as an area of high risk since. See U.S. General Accounting Office, *High-Risk Series: NASA Contract Management*, [GAO/HR-93-11](#) (Washington, D.C.: December 1992) and *Major Management Challenges and Program Risks: National Aeronautics and Space Administration*, [GAO-03-114](#) (Washington, D.C.: January 2003).

difficulties associated with controlling program costs and producing credible cost estimates.

- In 2000, congressional staff members found a \$644 million misstatement in NASA's fiscal year 1999 financial statements—an error not previously detected by NASA or its independent auditor. As we reported⁶ in March 2001, this error resulted because NASA's systems could not produce the budgetary data required by federal accounting standards. Instead, the agency was relying on an ad hoc, year-end data call from its 10 reporting units and the aggregation of data using a computer spreadsheet. We concluded that Arthur Andersen's work did not meet professional standards, and we questioned NASA management's and its auditor's determination that the agency's systems substantially complied with the requirements of FFMIA.
- In 2001 and subsequent years, our work in response to a legislative mandate revealed that NASA was unable to support the amounts that it had reported to the Congress as obligated against statutory spending limits for the space station and related space shuttle support.⁷ Here again, NASA's inability to provide this detailed obligation data was linked to its lack of a modern, integrated financial management system.
- Finally, in February 2002, NASA's new independent auditor, PwC, further confirmed NASA's financial management difficulties and disclaimed an opinion on the agency's fiscal year 2001 financial statements. The audit report also identified a number of material internal control weaknesses and stated that contrary to previous financial audit reports, NASA's financial management systems did not substantially comply with FFMIA.

⁶U.S. General Accounting Office, *Financial Management: Misstatement of NASA's Statement of Budgetary Resources*, [GAO-01-438](#) (Washington, D.C.: Mar. 30, 2001).

⁷U.S. General Accounting Office, *NASA: International Space Station and Shuttle Support Cost Limits*, [GAO-01-1000R](#) (Washington, D.C.: Aug. 31, 2001), and *NASA: Compliance with Cost Limits Cannot Be Verified*, [GAO-02-504R](#) (Washington, D.C.: Apr. 10, 2002).

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- Although NASA received an unqualified opinion on its fiscal year 2002 financial statements,⁸ NASA's auditor again report material weaknesses in NASA's internal controls over its Property, Plant, and Equipment (PP&E) and materials, which make up nearly \$37 billion, or 85 percent, of NASA's assets, and over the agency's processes for preparing its financial statements and performance and accountability report. According to the auditor's report, various deficiencies continued to exist within NASA's financial management operations, including (1) insufficient resources to address the volume of compilation work required to prepare NASA financial reports, (2) lack of an integrated financial management system, and (3) lack of understanding by NASA staff of federal reporting requirements. The nature and extent of the reported material weaknesses highlighted the agency's inability to generate reliable data for daily operations and decision making. Thus, it is not surprising that the auditor again concluded that NASA's financial management systems did not substantially comply with the requirements of FFMIA.

NASA's Auditor Disclaims an Opinion on Fiscal Year 2003 Financial Statements

NASA's financial management problems and internal control weaknesses continue to exist today. NASA's auditor, PwC, disclaimed an opinion on NASA's fiscal year 2003 financial statements. According to the auditor's report, NASA was unable to provide PwC sufficient evidence to support the financial statements and complete the audit within the time frames established by the Office of Management and Budget. In addition, for the third straight year, NASA's independent auditor concluded, just as we

⁸We conducted a limited scope review of NASA's fiscal year 2002 financial statement audit performed by NASA's IPA, PwC, to assist in planning future audits of the U.S. government's consolidated financial statements. Based on our review of PwC's supporting audit evidence, we would not have been able to rely on its work for the purpose of fulfilling our responsibilities related to the audit of the U.S. government's consolidated financial statements. We reported in March of 2004 to the NASA Inspector General that our review of PwC's supporting audit evidence revealed deficiencies in audit documentation, audit planning, and testing. Specifically, adequate audit tests were not performed for major balance sheet line items such as Fund Balance with Treasury; property, plant, and equipment (PP&E); and materials. It was not our intent to determine whether the audit opinion rendered was appropriate or to reperform any of the auditor's work. Our procedures consisted of an evaluation of evidence obtained from the auditor's fiscal year 2002 audit documentation and discussions with audit personnel. We did not independently test, reperform, or make supplemental tests of any of the account balances.

reported in November 2003,⁹ that the agency's new financial management system did not comply with the requirements of FFMIA. Although NASA attributed the auditor's disclaimer of opinion to the agency's implementation of a new financial management system, many of the reported problems were long-standing issues not related to implementation of the new system. The auditor reported material weaknesses that existed throughout NASA's financial management operations.

- First, NASA was unable to provide reliable documentation and an audit trail to support the financial statements. NASA's auditor reported that in an effort to populate its new financial management system, NASA summarized the previous 7 years of transaction-level detail from its legacy systems and entered the cumulative amount into the new system as if the transactions were current-year activity. As a result, many of the accounts supporting the financial statements were overstated by billions of dollars. In an effort to correct these errors and balance the accounts to the general ledger, NASA made net adjustments totaling \$565 billion but was not able to provide documentation supporting the adjustments.
- Second, NASA's internal controls over its reconciliation of fund balance with Treasury accounts were ineffective. Specifically, NASA failed to reconcile its fund balance with Treasury accounts during the year and resolve all differences. At year-end, NASA's general ledger account for fund balance with Treasury was materially overstated and did not reconcile to the balance reported by Treasury at year-end. To correct the overstatement, NASA made \$2 billion in unsupported net adjustments to its Fund Balance with Treasury account, which had the effect of reducing NASA's recorded balance so it equaled Treasury's reported balance. This type of adjustment is similar to forcing the balance recorded in your checkbook at the end of the month to reconcile with your bank statement. Instead of trying to determine the reason for the error and resolve the difference you, simply "plug" the difference to your checkbook balance. NASA's failure to perform reconciliation procedures throughout the year is a fundamental breakdown in basic internal controls and illustrates the human capital challenges NASA faces in overcoming its financial management problems.

⁹GAO-04-151.

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- Third, NASA's processes for preparing its financial statements continue to be ineffective. The continued weaknesses in NASA's financial statement preparation processes resulted in major delays and errors in preparing fiscal year-end financial statements. For example, NASA's auditor reported inconsistencies, such as the significant differences between the agency's Fund Balance with Treasury and Treasury's balance that should have been identified and corrected by NASA as part of the agency's internal quality control review process. In addition, NASA's financial statements were not prepared in accordance with federal accounting standards. As we reported in November 2003, the core financial module did not appropriately capture accrued contract costs and accounts payable information in accordance with federal accounting standards. Instead, in instances where costs and the corresponding liabilities were greater than the associated obligations, the differences were transferred outside of the general ledger and held in suspense until additional funds were obligated, thus understating NASA's reported program costs and liabilities. Although NASA officials stated that as of October 1, 2003, they no longer post costs in excess of obligations in a suspense account, their current solution still does not appropriately capture accrued cost and accounts payable in accordance with federal accounting standards.
 - Finally, NASA continues to lack effective internal controls over PP&E and materials. Although NASA reported that a corrective action plan had been implemented to address the deficiencies identified in the previous year's audit report, subsequent testing identified major errors in contractor-held PP&E and materials.

NASA's Effort to Implement New Integrated Financial Management System

NASA's new financial management system falls short in addressing the long-standing financial management issues that have prevented the agency from effectively monitoring over 90 percent of its annual budget and managing costly and complex programs, such as the International Space Station. For years, NASA has cited deficiencies within its financial management systems as a primary reason for not having the data required to oversee its contractors, accurately account for the full cost of its operations, and efficiently produce accurate and reliable information needed for both management decision-making and external reporting purposes. Recognizing the importance of successfully implementing an integrated financial management system, in April 2000, NASA began its IFMP effort. When completed, IFMP is planned to consist of nine

modules¹⁰ that will support a range of financial, administrative, and functional areas. This is NASA's third attempt at modernizing its financial management systems and processes. The first two efforts were eventually abandoned after a total of 12 years and a reported \$180 million. The schedule for implementing IFMP was originally planned for fiscal year 2008, but after NASA's new Administrator came on board in fiscal year 2002, the timeline was accelerated to fiscal year 2006, with the core financial module to be completed in fiscal year 2003. As of June 30, 2003, NASA reported that it had fully implemented the core financial module at all of its 10 operating locations.

Through IFMP, NASA has committed to modernizing its business processes and systems in a way that if implemented properly, will introduce interoperability and thereby improve the efficiency and effectiveness of its operations as well as bring the agency into compliance with federal financial management systems requirements. NASA has also committed to implementing IFMP within specific cost and schedule constraints. In 2003, we issued five reports¹¹ outlining the considerable challenges NASA faces in meeting its IFMP commitments and providing NASA the necessary tools to oversee its contracts and manage its program. For example, in April 2003, we reported that NASA had deferred addressing the needs of key system stakeholders,¹² including program managers and cost estimators, and was not following key best practices for acquiring and implementing the system. Then, in November 2003, we reported that NASA (1) acquired and deployed system components of IFMP without an enterprise architecture, or agencywide modernization blueprint, to guide and constrain program investment decisions; (2) did not use disciplined cost estimating processes or recognized best practices in preparing its life cycle cost estimates; and (3) had delayed implementation of many key external reporting capabilities.

¹⁰The nine modules are core financial, resume management, travel management, position description management, human resource management, payroll, budget formulation, contract administration, and asset management.

¹¹[GAO-03-507](#), [GAO-04-43](#), [GAO-04-151](#), [GAO-04-118](#), and [GAO-04-255](#).

¹²NASA defined those in the financial accounting arena as the system's users who, under NASA's plan, would determine the system's requirements, guide its implementation, and define and measure its success. Those who would benefit from the system's new capabilities were identified as stakeholders. Under NASA's plan, they would be the ultimate beneficiaries of the system improvements, but would not have a role in setting requirements or measuring and determining the success of the system's implementation.

IFMP Core Financial Module Will Not Fully Address the Needs of Key Stakeholders

Based on our review of NASA's three largest space flight programs—the space station, the space shuttle, and the Space Launch Initiative,¹³ in April 2003 we reported that the core financial module, as currently implemented, did not fully address the information requirements of stakeholders such as program managers, cost estimators, or the Congress. While NASA considers these officials to be the ultimate beneficiaries of the system's improvements, they were not involved in defining or implementing the system requirements and will not have a formal role in defining or measuring its success. As a result, NASA has neither reengineered its core business processes nor established adequate requirements for the system to address many of its most significant management challenges, including improving contract management; producing credible cost estimates; and providing the Congress with appropriate visibility over NASA's large, complex programs. Specific issues for key stakeholders include the following:

- *Program managers.* To adequately oversee NASA's largest contracts, program managers need reliable contract cost data—both budgeted and actual—and the ability to integrate these data with contract schedule¹⁴ information to monitor progress on the contract. However, because program managers were not involved in defining system requirements or reengineering business processes, the core financial module was not designed to integrate the cost and schedule data that they need. As a result, program managers told us that they would not use the core

¹³During the time of our review, NASA was pursuing a program—known as the Space Launch Initiative—to build a new generation of space vehicles to replace its aging space shuttle. This was part of NASA's broader plan for the future of space travel—known as NASA's Integrated Space Transportation Plan. On October 21, 2002, NASA postponed further implementation of the program to focus on defining the Department of Defense's role, determining future requirements of the International Space Station, and establishing the agency's future space transportation needs. In November 2002, the administration submitted to the Congress an amendment to NASA's fiscal year 2003 budget request to implement a new Integrated Space Transportation Plan. The plan made investments to extend the space shuttle's operational life and refocused the Space Launch Initiative program on developing an orbital space plane—which provides crew transfer capability to and from the space station—and next generation launch technology. The President's vision on space exploration, announced in January 2004, may alter that plan.

¹⁴The term “schedule” incorporates both the concept of status of work and whether a project or task is being completed within planned time frames. Depending on the nature of the work being performed, the method of measuring work progress varies. Work is measured in terms of tasks when a specific end product or result is produced. But when work does not produce a specific end product or result, level-of-effort or a more time-oriented method of measurement is used.

financial module to manage programs such as the space station and space shuttle and instead would continue to rely on hard copy reports, electronic spreadsheets, or other means to monitor contractor performance.

- *Cost estimators.* In order to estimate the costs of programs, cost estimators need reliable contract cost data at a level of detail greater than what the core financial module maintains. Although this module is technologically capable of maintaining the detail they need, cost estimators were not involved in defining the system requirements or reengineering business processes. Reengineering is critical here because a driving factor in determining what information cost estimators receive from contractors is what level of detail the contractors are required to provide, based on the contracts that they have negotiated with NASA. As a result, NASA has not determined the most cost-effective way to satisfy the information needs of its cost estimators. Because the core financial module will not contain the sufficiently detailed historical cost data necessary for projecting future costs, cost estimators will continue to rely on labor-intensive data collection efforts after a program is completed.
- *The Congress.* Based on our discussions with congressional staffs from NASA's authorizing committees, the agency did not consult with them regarding their information needs. Consequently, NASA cannot be sure that it is implementing a system that will provide the Congress with the information it needs for oversight.

According to IFMP officials, they chose to forgo certain system capabilities to expedite implementation of the core financial module. Thus, while the core financial module software is technologically capable of meeting key stakeholders' needs, it has not been configured to do so. IFMP officials have stated that these capabilities can be added at a later date. We made several recommendations related to engaging stakeholders, including cost estimators and program managers, in developing a complete and accurate set of requirements. Although NASA officials concurred with our recommendations, they disagreed with our finding—stating that they had already effectively engaged key stakeholders.

NASA Was Not Following Key Best Practices for Acquiring and Implementing IFMP

We reported in April 2003 that NASA's approach to implementing its new system did not optimize the system's performance and would likely cost more and take longer to implement than necessary. Specifically, NASA was not following key best practices for acquiring and implementing the system, which may affect the agency's ability to fully benefit from the new system's capabilities. First, NASA did not analyze the relationships among selected and proposed IFMP components to understand the logical and physical relationships among the components it acquired. By acquiring these IFMP components without first understanding system component relationships, NASA increased its risks of implementing a system that will not optimize mission performance and will cost more and take longer to implement than necessary. Second, although industry best practices and NASA's own system planning documents indicate that detailed requirements are needed as the basis for effective system testing, NASA did not require documentation of detailed system requirements prior to system implementation and testing. NASA's approach instead relied on certain subject matter experts' knowledge of the detailed requirements necessary to evaluate the functionality actually provided.

We made several recommendations to focus near-term efforts on stabilizing the operational effectiveness of deployed IFMP components. While NASA officials concurred with our recommendations, they disagreed with our findings—stating that they had already implemented effective processes related to performing dependency analysis and requirements and testing.

IFMP Components Deployed without an Enterprise Architecture

We reported in November 2003 that NASA had acquired and deployed system components of IFMP without an enterprise architecture, or agencywide modernization blueprint, to guide and constrain program investment decisions—actions that increased the chances that these system components will require additional time and resources to be modified and to operate effectively and efficiently. During the course of our review of IFMP, NASA implemented some of these key architecture management capabilities, such as having an enterprise architecture program office; designating a chief architect; and using an architecture development methodology, framework, and automated tools. However, at the time, NASA had not yet established other key architecture management capabilities, such as designating an accountable corporate entity to lead the architecture effort, having an approved policy for developing and maintaining the architecture, and implementing an independent verification and validation function to provide needed assurance that

architecture products and architecture management processes are effective.

As NASA proceeds with its enterprise architecture effort, it is critical that it employs rigorous and disciplined management practices. Such practices form the basis of our architecture management maturity framework,¹⁵ which specifies by stages the key architecture management controls that are embodied in federal guidance and best practices, provides an explicit benchmark for gauging the effectiveness of architecture management, and provides a road map for making improvements. GAO made several recommendations to ensure that NASA had the necessary agencywide context within which to make informed IFMP and other systems modernization decisions. NASA agreed that improvements were needed and reported that it had efforts under way, consistent with our recommendations, to develop an architecture and ensure that IFMP proceeded within the context of the architecture. We have not evaluated NASA's progress on these commitments.

IFMP Further Challenged by Questionable Cost Estimates and an Optimistic Schedule

Questionable cost estimates, an optimistic schedule, and insufficient processes for ensuring adequate funding reserves have put IFMP at an even greater risk of not meeting program objectives. In preparing its life cycle cost estimates for IFMP,¹⁶ NASA did not use disciplined cost estimating processes as required by its standards and recognized best practices. For example, NASA's current IFMP life cycle cost estimate—which totals \$982.7 million and is 14 percent, or \$121.8 million, over the previous IFMP life cycle cost estimate—was not prepared on a full-cost basis. The estimate included IFMP direct program costs, NASA enterprise support, and civil service salaries and benefits, but it did not include the cost of retiring the system, enterprise travel costs, the cost of nonleased NASA facilities for housing IFMP, and other direct and indirect costs likely to be incurred during the life of the program. In addition, NASA did not consistently use breakdowns of work in preparing the cost estimate, although NASA guidance calls for breaking down work into smaller units to facilitate cost estimating and project and contract management as well as

¹⁵U.S. General Accounting Office, *Information Technology: A Framework for Assessing and Improving Enterprise Architecture Management (Version 1.1)*, [GAO-03-584G](#) (Washington, D.C.: April 2003).

¹⁶Fiscal years 2001 through 2010.

to help ensure that relevant costs are not omitted. In cases where work breakdowns were used, the agency did not always show the connection between the work breakdown estimates and the official program cost estimate. This has been a weakness since the inception of the program. Without a reliable life cycle cost estimate, NASA will have difficulty controlling program costs.

In addition, NASA's schedule may not be sufficient to address program challenges, such as personnel shortages. To address personnel shortages during the implementation of the core financial module, NASA paid nearly \$400,000 for extra hours worked by center employees and avoided a slip in IFMP's compressed schedule. However, the schedule for implementing the budget formulation module has slipped because IFMP implemented this module simultaneously with the core financial module—an action advised against by a contractor conducting a lessons-learned study—placing heavy demand on already scarce resources.

Finally, the program did not consistently perform in-depth analyses of the potential cost impact of risks and unknowns specific to IFMP, as required by NASA guidance. Instead, the program established funding reserves on the basis of reserve levels set by other high-risk NASA programs. As a result, reserve funding for IFMP contingencies may be insufficient—which is particularly problematic, given the program's questionable cost estimates and optimistic schedule. As we were completing our audit work, one module—budget formulation—was already experiencing shortfalls in its reserves, and project officials expressed concern that the module's functionality may have to be reduced. Moreover, the program did not quantify the cost of high criticality risks—risks that have a high likelihood of occurrence and a high magnitude of impact—or link these risks to funding reserves to help IFMP develop realistic budget estimates. We made recommendations to provide NASA the necessary tools to accurately estimate program cost and predict the impact of program challenges. Although NASA concurred with our recommendations for corrective action, NASA indicated that its current processes were adequate for preparing work breakdown structure cost estimates, estimating life-cycle costs, and establishing reserves based on IFMP-specific risks.

Core Financial Module Does Not Address Long-standing External Reporting Issues

The core financial module, as currently implemented, also does not address many of the agency's most challenging external reporting issues. Specifically, the core financial module does not address NASA's past external reporting problems related to property accounting and budgetary

accounting. Such shortcomings limit the ability of the Congress and other interested parties to evaluate NASA's performance on an ongoing basis because NASA's financial management systems do not provide a complete accounting of its assets and how funds were spent. If these issues are not addressed, NASA will continue to face risks in its ability to adequately oversee its programs, manage their costs, and provide meaningful information to external parties, such as the Congress.

- *Property accounting.* The core financial module has not addressed the problems I discussed previously related to material weaknesses in NASA's internal controls over PP&E and materials. NASA's PP&E and materials are physically located throughout the world, at locations including NASA centers, contractor facilities, other private or government-run facilities, and in space. NASA's most significant challenge, with respect to property accounting, stems from property located at contractor facilities, which accounts for almost \$11 billion, or about one-third, of NASA's reported \$37 billion of PP&E and materials and consists primarily of equipment being constructed for NASA or items built or purchased for use in the construction process. NASA has not reengineered the agency's processes for capturing contract costs associated with PP&E and material, and therefore, does not record these property costs in the general ledger at the transaction level. Instead, according to NASA officials, the agency plans to continue to (1) record the cost of PP&E and materials as expenses when initially incurred, (2) periodically determine which of those costs should have been capitalized, and (3) manually correct these records at a summary level. Because NASA does not maintain transaction-level detail, the agency is not able to link the money it spends on construction of its property to discrete property items and therefore must instead rely solely on its contractors to periodically report summary-level information on these assets to NASA.
- *Budgetary accounting.* The software NASA selected, and is now using, for its core financial module does not capture and report certain key budgetary information needed to prepare its Statement of Budgetary Resources. As a result, NASA continues to rely on manual compilations and system queries to extract the data needed to prepare the Statement of Budgetary Resources—just as it did using its legacy general ledger system. According to NASA officials, a “patch” release or software upgrade in October 2003 has addressed the issues we identified related to budgetary accounting. However, we have not verified NASA's assertion and previously reported that NASA had implemented similar

“patch” releases that did not fully address this issue. As we reported in March 2001, this cumbersome, labor-intensive effort to gather the information needed at the end of each fiscal year was the underlying cause of a \$644 million misstatement in NASA’s fiscal year 1999 Statement of Budgetary Resources. Although the software that NASA purchased for the core financial module was certified by the Joint Financial Management Improvement Program (JFMIP) as meeting all mandatory system requirements, NASA may have relied too heavily on the JFMIP certification. JFMIP has made it clear that its certification, by itself, does not automatically ensure compliance with the goals of FFMIA. Other important factors that affect compliance with *Federal Financial Management System Requirements* include how well the software has been configured to work in the agency’s environment and the quality of transaction data in the agency’s feeder systems. As I mentioned previously, NASA did not use the disciplined requirements management and testing processes necessary to reduce the risks associated with its implementation efforts to acceptable levels. Therefore, it is not surprising that NASA found that the system was not providing the desired functionality or performing as expected.

Core Financial Module Does Not Comply with FFMIA

As I mentioned previously, in November 2003,¹⁷ we reported that NASA’s new core financial module did not comply substantially with the requirements of FFMIA. At the time, NASA disagreed with our conclusions and recommendations regarding its financial management systems and stated that many of the problems we identified as of June 30, 2003, had been resolved by September 30, 2003. However, in February 2004, after NASA’s independent auditor also concluded that NASA’s financial management system, at September 30, 2003, did not substantially comply with the requirements of FFMIA, NASA reversed its position and concurred with all of our recommendations. Specifically, NASA agreed to implement a corrective action plan that will engage key stakeholders in developing a complete and accurate set of user requirements, reengineering its acquisition management processes, and bringing its systems into compliance with FFMIA.

FFMIA stresses the need for agencies to have systems that can generate timely, accurate, and useful financial information with which to make

¹⁷[GAO-04-151](#).

informed decisions, manage daily operations, and ensure accountability on an ongoing basis. Compliance with FFMIA goes far beyond receiving a “clean” opinion on financial statements. Instead, FFMIA provides agencies with the building blocks needed to reform their financial management organization and practices, and to support program managers in making wise decisions about program cost and performance. However, as we reported in April 2003 and in November 2003, NASA’s core financial module did not provide program managers, cost estimators, or the Congress with managerially relevant cost information that they need to effectively manage and oversee NASA’s contracts and programs, such as the International Space Station. NASA’s continuing inability to provide its managers with timely, relevant data on contract spending and performance is a key reason that we continue to report NASA’s contract management as an area of high risk. Because this information is not available through the core financial module, program managers will continue to rely on hard copy reports, electronic spreadsheets, or other means to monitor contractor performance. Consequently, NASA risks operating with two sets of books—one that is used to report information in the agency’s general-purpose financial reports and another that is used by program managers to run NASA’s projects and programs.

NASA Faces Significant Challenges in Reforming Its Financial Management Operations

Many of NASA’s financial management problems are deeply rooted in an agency culture that has not fully acknowledged the nature and extent of its financial management difficulties and does not see finance as intrinsic to the agency’s program management decision process. Over the past 4 years, we have issued numerous reports highlighting NASA’s financial management difficulties and making recommendations for improvement. However, NASA management has been slow to implement these recommendations and in many cases has denied the existence of the problems we and others have identified—instead attributing the agency’s difficulties to the auditor’s sampling methodology or the auditor’s lack of understanding of NASA’s operations. For example:

- In response to our August 2001 and April 2002 reports on NASA’s compliance with the International Space Station and shuttle support cost limits, NASA management disagreed with our finding that NASA was unable to support the amounts that it had reported to the Congress as obligated against the statutory spending limits for the space station and related space shuttle support costs. At the time, NASA asserted that the obligations were verifiable and that our audit methodology was the problem. We planned to use statistical sampling, which is a standard,

widely used methodology that enables auditors to draw conclusions about large populations of transactions by testing a relatively small number of those transactions. In order for a statistical sample to be valid, the complete population of items of interest must be subject to selection and every transaction must have a chance to be selected for testing. However, after nearly a year, NASA was not able to provide us with a complete population of transactions from which to draw our sample. Consequently, we were unable to verify the accuracy of the amount NASA reported against the cost limits.

- In a March 20, 2002, statement before this subcommittee NASA management attributed its failure to obtain an unqualified opinion on the agency's fiscal year 2001 financial statements to its auditor's newly required protocol for sampling. However, the only thing new about the sampling protocol was that NASA's previous auditor, Arthur Andersen, had not employed a similar approach. In fact, to test amounts reported on NASA's fiscal year 2001 financial statements, NASA's new financial statement auditor, PwC, attempted to use standard transaction-based statistical sampling similar to the methods we had attempted in our effort to audit the underlying support for amounts charged to the spending limits. In its audit report, PwC noted that successive summarization of data through NASA's various financial systems impeded NASA's ability to maintain an audit trail down to the detailed transaction-level source documentation. For this and other reasons, PwC concluded that it was unable to audit NASA's financial statements.
- In response to our April 2003 report on the status of NASA's implementation of IFMP, NASA management disagreed with all of our findings, including our concerns that NASA program managers and cost estimators were not adequately involved in defining system requirements and, therefore the system did not fully address their information needs. In its written comments, NASA dismissed these concerns and stated that the problem was a lack of understanding not a lack of information, and that it was incumbent upon program managers and cost estimators to learn and understand the capabilities of the new system and take advantage of them for their specific purposes.
- Finally, in response to our November 2003 report on IFMP's external reporting capabilities, NASA management disagreed with all of our conclusions and recommendations, including our conclusion that the core financial module, as implemented in June 2003, did not comply substantially with FFMA. In its written comments, dated October 31,

2003, NASA asserted that many of the problems we identified in June 2003 were resolved by September 30, 2003. However, NASA's assertions did not prove to be accurate. In January 2004, NASA's independent financial statement auditor confirmed that the problems we identified in June 2003 related to NASA's accrued costs, budgetary accounting, and property accounting still existed at September 30, 2003, and that the system was not in compliance with FFMIA requirements. NASA reversed its position in February 2004 and concurred with our recommendations that it implement a corrective action plan that will engage key stakeholders in developing a complete and accurate set of user requirements, reengineering its acquisition management processes, and bringing its systems into compliance with FFMIA.

The challenges that NASA faces in reforming its financial management operations are significant, but not insurmountable. As our prior work¹⁸ shows, clear, strong leadership will be critical for ensuring that NASA's financial management organization delivers the kind of analysis and forward-looking information needed to effectively manage its many complex space programs. Further, in order to reap the full benefit of a modern, integrated financial management system, NASA must (1) routinely generate reliable cost and performance information and analysis, (2) undertake other value-added activities that support strategic decision making and mission performance, and (3) build a finance team that supports the agency's mission and goals.

Conclusion

Until NASA fully acknowledges the nature and extent of its financial management difficulties and better integrates its financial management operations with its program management decision process, it will continue to face many of the same financial management problems I have discussed today. While modernizing NASA's financial management system is essential to enabling the agency to provide its managers with the kind of timely, relevant, and reliable information that they need to manage cost, measure performance, make program funding decisions, and analyze outsourcing or privatization options, NASA cannot rely on technology

¹⁸U.S. General Accounting Office, *Executive Guide: Creating Value Through World-class Financial Management*, GAO/AIMD-00-134 (Washington, D.C.: April 2000). Our executive guide was based on practices used by nine leading organizations—Boeing; Chase Manhattan Bank; General Electric; Pfizer; Hewlett-Packard; Owens Corning; and the states of Massachusetts, Texas, and Virginia.

alone to solve its financial management problems. Rather, transforming NASA's financial management organization will also require sustained top leadership attention combined with effective organizational alignment, strategic human capital management, and end-to-end business process reengineering. This goes far beyond obtaining an unqualified audit opinion and requires that agency financial managers focus on their overall operations in a strategic way and not be content with an automated system that helps the agency get a "clean" audit opinion once a year without providing additional value to the program managers and cost estimators who use its financial data.

Mr. Chairman, this concludes our prepared statement. We would be pleased to respond to any questions that you or other members of the Subcommittee may have.

Contacts and Acknowledgments

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Related GAO Products

Business Modernization: Disciplined Processes Needed to Better Manage NASA's Integrated Financial Management Program. [GAO-04-118](#). Washington, D.C.: November 21, 2003.

Business Modernization: NASA's Integrated Financial Management Program Does Not Fully Address External Reporting Issues. [GAO-04-151](#). Washington, D.C.: November 21, 2003.

Information Technology: Architecture Needed to Guide NASA's Financial Management Modernization. [GAO-04-43](#). Washington, D.C.: November 21, 2003.

Business Modernization: Improvements Needed in Management of NASA's Integrated Financial Management Program. [GAO-03-507](#). Washington D.C.: April 30, 2003.

Major Management Challenges and Program Risks: National Aeronautics and Space Administration. [GAO-03-114](#). Washington, D.C.: January 2003.

NASA: Compliance With Cost Limits Cannot Be Verified. [GAO-02-504R](#). Washington, D.C.: April 10, 2002.

NASA: Leadership and Systems Needed to Effect Financial Management Improvements. [GAO-02-551T](#). Washington, D.C.: March 20, 2002.

NASA: International Space Station and Shuttle Support Cost Limits. [GAO-01-1000R](#). Washington, D.C.: August 31, 2001.

Financial Management: Misstatement of NASA's Statement of Budgetary Resources. [GAO-01-438](#). Washington, D.C.: March 30, 2001.

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