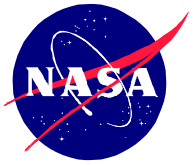
National Aeronautics and
Space Administration

Headquarters
Washington, D.C. 20546-0001



Reply to Attn of: Office of Inspector General

December 1, 2000

The Honorable Richard K. Armey
House Majority Leader
House of Representatives
Washington, DC 20515-6502

Dear Mr. Armey:

Enclosed is my response to your request dated October 12, 2000, concerning what the Office of Inspector General perceives to be the 10 most serious management challenges for NASA.

The Agency's three-part mission encompassing scientific research, space exploration, and technology development and transfer continue to pose bold challenges for NASA's civil service and contractor workforces. NASA is reengineering its ways of doing business to ensure the safe operation of all programs and to maximize the effectiveness of technology innovation, while adjusting to budgetary and personnel constraints. The NASA Administrator established safety as the Agency's number one value. We agree that safety must be a significant priority if the Agency is to successfully achieve its missions, and we will support that priority by performing a number of audits and reviews on safety-related issues. Information technology (IT) is a key tool of a scientific and technological organization such as NASA. The Agency's ability to remain free from unauthorized access of its networks becomes more critical as the Agency becomes ever more reliant on cyber-communications. We will focus our work to help assure the security and integrity of NASA's computer and communications systems. We will also continue our focus on procurement issues and technology transfer. We believe there are efficiencies from outsourcing aspects of IT. However, outsourcing brings with it considerable risks unless the Agency carefully provides for establishing internal controls after analyzing questions such as:

- Who/what entities have ownership interests in the service provider? Is the provider owned by foreign interests?
- What is the security posture of the provider? Is it compromised by organized groups/hostile entities?
- What process do contractors use to provide security screening for potential employees being considered for employment under these contracts?

- Does NASA have contract oversight clauses and an oversight apparatus in place?

Enclosure 1 provides a listing of each problem area. Enclosure 2 provides a narrative that describes more fully each management challenge. Enclosure 3 summarizes completed reports and significant open recommendations.

Should you have any questions or need additional information, please call me on (202) 358-1220. We look forward to working with you and your staff.

Sincerely,

Original Signed By
Roberta L. Gross
Inspector General

3 Enclosures

bcc:
L/E. Heffernan
IG, XO, AIGA, AIGI, AIGIAIA Chrons
W/L. Ball
W/P. Iler

A separate letter to the following:
The Honorable Fred Thompson, Chairman
Senate Governmental Affairs Committee

The Honorable Pete Domenici, Chairman
Senate Budget Committee

The Honorable Dan Burton, Chairman
House Committee on Government Reform

The Honorable John Kasich, Chairman
House Budget Committee

Future Issues

For each of the 10 management challenges, we have identified several issues. We will examine these issues in future audits and reviews.

Safety and Mission Assurance. Keys to ensuring safety in future NASA operations include:

- Assuring appropriate level of training for staff who conduct safety reviews and evaluations.
- Maintaining adequate safety reporting systems.
- Ensuring variances to standard safety procedures are appropriately justified, reviewed, and approved.
- Maintaining an effective emergency preparedness program.
- Ensuring Agency and contractor compliance with safety standards and regulations.
- Ensuring product safety and reliability.
- Ensuring the Space Shuttle and ISS maintain crew safety.

International Space Station. Keys to continued ISS assembly and operation are:

- Managing the political, financial, technical, and safety challenges presented by an international partnership.
- Overcoming technical challenges inherent in manufacturing, assembling, and testing complex hardware and software components provided by different nations and integrated in space.
- Safely maintaining, upgrading, and operating a structure as complicated as the Space Station.
- Maximizing the beneficial use of the Space Station for scientific research and technology development.

Information Technology. Keys to an effective IT program include:

- Ensuring data security, integrity, and application controls.
- Protecting operations and communications with spacecraft.
- Monitoring and evaluating the streamlining of operations through outsourcing information technology operations for cost efficiencies, dependency on the vendor for technological direction, vulnerability of strategic information to outsiders, and dependency on the viability of the vendor.

Procurement. Keys to effective procurement at NASA include:

- Ensuring proper levels of staffing to perform contracting requirements.
- Providing sufficient controls over and monitoring of both prime and subcontractors.
- Implementing or increasing the use of innovative procurement procedures such as earned value management and performance incentive fees.
- Ensuring costs billed to NASA cost-type contracts, due to the changing industry environment, are reasonable and allowable.

Fiscal Management. Keys to improved fiscal management include:

- Monitoring contractor performance of financial statement audits to ensure that the statements are properly prepared and thoroughly reviewed.
- Ensuring adequate integration and testing of newly developed automated accounting modules or capability.
- Ensuring that the Agency continues to properly account for and record financial transactions as new capability is implemented.

Program and Project Management. Keys to effectively managing NASA programs include:

- Improving planning to enable the Agency to accomplish its missions in the face of budget and human capital issues.
- Eliminating duplication in programs and improving coordination with other research and development organizations.
- Ensuring that programs and projects accurately assess their progress and successfully achieve their goals.
- Effectively using technology developments to increase Agency productivity.

Launch Vehicles. Keys to the development and use of launch vehicles include:

- Assuring the availability of small ELV's to ensure schedule milestones and cost effectiveness of NASA missions.
- Evaluating whether NASA's providing the majority of developmental funds and assigning technology rights to its industry partners in the development of the new RLV's are in the best interest of the Government.
- Ensuring that plans are in place and are effectively implemented to address Shuttle systems obsolescence, logistics support, technical/safety upgrades, and funding.

Technology Development. Keys to effective technology development include:

- Achieving a balance between scientific research and technology development and demonstration projects.
- Continuing to refine the technology transfer process to ensure that U.S. industry achieves the maximum benefit from the new technologies identified.
- Determining if NASA's organizational structure effectively supports technology development and transfer.
- Forming innovative partnership arrangements with U.S. industry to share both the risk and costs of technology demonstration and commercialization.
- Ensuring that NASA technology demonstrations do not unfairly distort the marketplace.
- Ensuring that adequate controls exist on cooperative technology development programs.
- Ensuring adequate protection of NASA-developed technology

International Agreements. Key considerations with the use of international agreements are:

- Program and project vulnerability to schedule delays and cost overruns that require diplomatic rather than contractual solutions.
- Security controls on technology that impacts national security.
- Controls to assure the quality and timeliness of the goods and services provided.
- Mechanisms to assure a balance between program needs and national considerations.
- Plans with specific critical paths and planned alternative courses of action to maintain program/project continuity.
- Proper controls over access to NASA facilities by foreign national visitors.

Environmental Management. Keys to effective management of environmental issues include:

- Prioritizing and addressing environmental obligations.
- Developing consistent procedures under an Agencywide policy.
- Negotiating cost-sharing agreements for environmental cleanup with previous Government and private sector tenants that are also responsible parties.

NASA's Top 10 Management Challenges

Under the authority of the Inspector General Act, the Office of Inspector General's (OIG's) mission is to conduct and supervise independent audits, investigations, inspections, and other reviews to promote economy, efficiency, and effectiveness and to prevent and detect criminal fraud, waste, and mismanagement. During our assessments of NASA's efforts to achieve its scientific and technology goals, we identified the following 10 management challenges as the Agency's most significant vulnerabilities.

Challenge	Narrative	Table (Enclosure 3)
1. Safety and Mission Assurance	Page 6	1, Page 40
2. International Space Station	Page 9	2, Page 46
3. Information Technology	Page 12	3, Page 49
4. Procurement	Page 18	4, Page 62
5. Fiscal Management	Page 22	5, Page 72
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7. Launch Vehicles	Page 30	7, Page 83
8. Technology Development	Page 32	8, Page 90
9. International Agreements	Page 34	9, Page 92
10. Environmental Management	Page 37	10, Page 97

We modified our list of the top 10 management challenges from those identified in the prior 2 years due to a number of factors including completion of corrective actions by the Agency, budget reductions, implementation of leading edge technology, and the continued commercialization of the aerospace industry. We eliminated the Year 2000 Problem issue as a single, focused challenge from our list of management challenges. The Integrated Financial Management Project (IFMP) issue is a continuing challenge for NASA. However, we have identified other related financial management issues that we combined with IFMP under the Fiscal Management challenge. We expanded the Earth Science challenge into a broader category titled Program and Project Management due to the Agency's efforts to modify its management process for all programs and projects, implement earned value management, and update the NASA Federal Acquisition Regulation (FAR) Supplement. Last year, we added Research Technology Demonstration/Application as a new management challenge area due to the importance of ensuring that NASA-developed technology is effectively transferred to U.S. industry to improve its competitive position. This year, we renamed the area to more precisely identify the concern—Technology Development.

The NASA OIG has a positive role in helping the Agency achieve its goals. Our planned projects for FY 2001 will address each of NASA's top 10 challenges. In addition, our review of the Agency's implementation of Government Performance and Results Act (GPRA) requirements cuts across all challenge areas. Our GPRA work will assess, on a selective basis, the metrics NASA developed to measure the success of its programs and

how well the Agency is measuring its performance. We will also address requirements of the Government Information Security Reform through our IT audits and evaluations.

The NASA OIG homepage, http://www.hq.nasa.gov/office/oig/hq, provides current information on our planning and details related to specific workplan project objectives. The homepage also provides access to the complete text of most of our reports issued during the last 3 years.

1. Safety and Mission Assurance

The NASA Administrator has stated that the Agency's number one core value is safety. NASA's Agency Safety Initiative (ASI) established a goal to make the Agency the nation's leader in the safety and occupational health of its workforce and the safety of the products and services it provides. The ASI's four Core Process Requirements are to promote and ensure safety for (1) the public, (2) astronauts and pilots, (3) employees on the ground, and (4) high-value equipment and property. Space exploration involves risk, including the risk of failure. Without risk, there can be little discovery, and discovery is NASA's principal mission. To maximize the likelihood of success, NASA must become an informed risk taker by identifying, understanding, and managing risk as part of all activities.

NASA has taken action to ensure its contractor workforce is supportive of and accountable for safety. In April 1999, the Agency established Risk-Based Acquisition Management as a NASA procurement initiative to reduce the likelihood and severity of impact from unforeseen events through vigorous risk management. A key element of the initiative includes revising the NASA FAR Supplement to incorporate risk management including safety and security considerations as the core concern of all contracting actions except for the purchase of commercial off-the-shelf items.

Completed audit work as well as the Agency's continued emphasis justifies the reporting of safety and mission assurance as a significant management challenge. For example, as the Kennedy Space Center (Kennedy) Payload Ground Operations contractor, The Boeing Company (Boeing) performs payload-processing activities for Space Shuttle and expendable launch vehicle payloads, including flight elements of the International Space Station (ISS). Boeing performs such work primarily at two Kennedy processing facilities: the Space Station Processing Facility (SSPF) and the Operations and Checkout (O&C) building. Safety is a critical element of contractor performance. The House of Representatives Committee on Science requested that the OIG review the safety functions of Kennedy's Payload Ground Operations Contract (PGOC) performed by McDonnell Douglas Aerospace, Space and Defense Systems, a subsidiary of Boeing. We reviewed the operations to determine whether the contractor (1) had clearly defined safety responsibilities between Boeing and NASA, (2) used hazardous materials in Kennedy's processing facilities, and (3) properly controlled hazardous materials, if used.

The audit identified that ground workers at Kennedy were using potentially hazardous materials in both the SSPF and O&C building that consistently failed required tests for flammability resistance and electrostatic discharge. This occurred because Boeing's safety office did not perform adequate, contract-required inspections of the facilities to ensure that NASA had approved all plastic films, foams, and adhesive tapes in use or that ground workers removed unapproved materials from the premises. NASA records show that the materials failed required tests as far back as July 1992. Beginning in September 1999, NASA authorized variances for the use of some of the materials. However, these variances were ineffective because neither the Kennedy nor Boeing safety offices reviewed the variances, and Boeing did not perform any risk analyses to support the variances, as

required by the PGOC. As a result, NASA has not identified, documented, and appropriately mitigated the risks of using the potentially hazardous materials and exposing ground workers and flight hardware to increased risks. NASA and Boeing Safety and Materials personnel met in December 1999 and acknowledged that problems exist regarding the use of potentially hazardous materials in both the SSPF and O&C building.

We recommended that NASA management (1) implement procedures to ensure the safe use of all materials that do not meet standards, (2) clarify instructions for preparing Material Usage Agreements, and (3) increase surveillance of Boeing's inspection procedures. We also recommended that the PGOC Contracting Officer (1) determine whether the Agency has a basis to withhold contract costs related to noncompliant plastics, foams, and adhesives, and (2) take proper contract award fee action based on Kennedy's increased surveillance of the Payload Ground Operations contractor. Management concurred with the recommendations and has planned or implemented responsive corrective actions. However, management contended that plastics, foams, and adhesives are not inherently hazardous materials but can create potentially hazardous conditions if not properly handled.

On February 26, 1999, the Administrator emphasized the need for NASA contractors to be supportive of and accountable for safety and has subsequently reiterated this point several times. The NASA Safety Policy generally requires that NASA safety personnel be actively involved in NASA procurement actions and conduct appropriate surveillance of contractors' safety programs.

Our audit of Contract Safety Requirements at Kennedy and the Marshall Space Flight Center (Marshall) identified that NASA is taking action to ensure its contractor workforce is supportive of and accountable for safety. Through the Risk Based Acquisition Management initiative, the Agency is revising, but has not yet published, the updated NASA FAR Supplement to ensure that risk is the core concern of all contracting actions except for the purchase of commercial off-the-shelf items. Although the initiative is a positive step toward improving the safety practices of NASA contractors, it does not apply to existing contracts. We found that 60 percent (15 out of a total of 25) of the contracts reviewed at Kennedy and Marshall did not include basic requirements to ensure safety. Specifically, not all contracts that we reviewed included basic requirements such as the NASA FAR Supplement safety clause and a NASA-approved, contractor safety plan at contract award. This condition occurred because the applicable Center safety offices were not adequately involved in the procurement process to ensure that these basic safety requirements were consistently applied to NASA contractors. As a result, NASA lacks assurance that its contractors at Kennedy and Marshall are working in accordance with NASA safety standards. By not including certain safety provisions and requirements in the contract, contractors are not contractually bound to the requirement for compliance with all Federal, state, and local laws applicable to safety. Three of the questioned contracts involve extremely hazardous operations, and three are with contractors who have been involved in NASA mishaps. In addition, five of the questioned contractors have had prior safety violations as reported by Occupational Safety Health Administration.

We recommended that NASA Management at Kennedy and Marshall (1) identify all open contracts that either involve potentially hazardous operations or exceed $1 million and determine whether those contracts have the required safety clauses and contractor safety plans; (2) determine the cost-effectiveness of modifying those contracts determined deficient, assess the risk of not modifying the contracts, and make those modifications deemed cost-effective and necessary; and (3) direct Center safety offices to assist the responsible Center official in performing an appropriate level (based on assessed risk) of contractor surveillance for each current, applicable contract. Management concurred with the recommendations and initiated responsive corrective action.

2. International Space Station

The mission of the ISS is to enable long-term exploration of space. The ISS will provide scientists, engineers, and entrepreneurs a platform on which to perform complex, long-duration, and replicable experiments in the unique environment of space. The launch of the *Zarya* Control Module in November 1998 began the assembly phase of the ISS. Since then, four other elements have been added—*Unity*, the United States Node 1, in December 1998; *Zvezda*, the Russian-built Service Module, in July 2000; and the Z1 Truss (a 9-ton exterior framework) and a 3-ton docking port, in October 2000. In November 2000, the first long-duration crew, Expedition 1, arrived at the ISS. Expedition 1, consisting of one astronaut and two cosmonauts, will spend about 4 months aboard the ISS activating critical systems, conducting the first scientific experiments, and welcoming three visiting Space Shuttle crews. NASA is reducing dependence on Russian participation in the ISS by acquiring a U.S. Propulsion System, designed to perform critical functions now performed by the Service Module.

Our reviews have found significant problems related to ISS cost, contingency planning, and the X-38/Crew Return Vehicle (CRV). These problems indicate that the ISS should be reported as a significant management challenge.

ISS contracts continue to experience significant cost growth. Our review of Performance Management of the ISS Contract found that Boeing, the prime contractor, reported to NASA management unrealistically low estimates of projected cost overruns from October 1998 through February 1999. In March 1999, Boeing announced that actual and projected cost overruns on the ISS prime contract had grown by $203 million, from $783 million to $986 million. This was the third major increase in reported overruns within 2 years—a total increase of $708 million over original cost estimates. Both the ISS Program Office and Boeing had informed senior NASA management that further cost overruns were likely. Although the Program Office was aware and had evidence of cost overruns and schedule slippages, it did not effectively challenge the contractor's estimate or sufficiently emphasize estimates of the cost overrun. As a result, NASA did not take corrective action corrective action, and Boeing received incentive fees totaling $16 million that it had not earned and benefited financially from those fees. We recommended that the ISS Program Office strengthen various policies and procedures to ensure that Program cost estimates are realistic. Management concurred or partially concurred with the recommendations.

Our report on Space Station Contingency Planning for International Partners showed that the partners did not include or clearly identify several critical elements for effective risk management, as required by Agency guidance. Specifically, the contingency plan did not contain cost and schedule impacts and did not clearly identify mitigation measures and primary consequences of the contingencies. Also, the Program Office did not have a process that ensured the contingency plan was kept current. The contingency plan did not include some actions being taken to prevent further Russian delays. Until the contingency plan is complete, NASA cannot fully reduce Space Station risks through advance planning and the establishment of response plans. Further, without estimated costs, the Agency, the

Administration, and the Congress cannot adequately assess the feasibility of proposed responses or determine budgetary impact. Management concurred with our recommendations to ensure that the ISS contingency plan complies with Agency risk management guidance and to establish a process to ensure the contingency plan is kept current.

The United States is committed to providing a crew-return capability for the ISS. During our audit of X-38/CRV Project Management, we found that (1) NASA had made no provision for an operational test of the CRV to determine its safety for human space flight and (2) the Project's acquisition strategy of "rapid prototyping" entailed significant risk compared to a more traditional approach. The project is relying on a high degree of concurrency among design, development, test, and engineering/evaluation activities and a highly optimistic schedule to accomplish development and production of the CRV. While this project approach offers potential high payoff, it negatively affects the Agency's ability to accurately adhere to project cost and schedule. We recommended that NASA management (1) modify the X-38/CRV Project Plan to include a contingency for an operational test and (2) develop and document major characteristics, criteria, and strategies for progressing thorough major project phases. Management concurred with the recommendations.

We also have concerns with ISS command and control communications and with the ISS Portable Computer Systems. (See Challenge 3, Information Technology.)

Commercialization. The Commercial Space Act of 1998 established the policy that a priority goal of constructing the ISS is the economic development of Earth orbital space. Congress declared that the use of free market principles would reduce ISS operational costs for all partners and the Federal Government's share of the United States burden to fund operations. The use of free market principles applies to operating, servicing, allocating the use of, and adding capabilities to the ISS and to the resulting fullest possible engagement of commercial providers and participation of commercial users. Therefore, Congress tasked NASA with delivering reports and studies to assess the feasibility of implementing the Act and to identify opportunities and potential cost savings from commercial providers.

Congress also asked NASA to conduct an independent market study to help identify potential commercial uses. The independent study, conducted by KPMG, LLC, and submitted in December 1999, stated that the future commercial markets are still too premature and that any market study would be speculative. However, one of the most promising commercial markets the study identified was to utilize space imagery in the areas of education and entertainment. In June 2000, NASA and Dreamtime Holdings, Incorporated, announced a partnership designed to deliver high-definition television coverage of astronaut activities aboard the ISS and on Space Shuttle missions. The partnership is also designed to create an easily accessible, Web-searchable, digital archive of the best of NASA's space imagery. We will review the Agency's partnership arrangement with Dreamtime in the near future.

The General Accounting Office (GAO) performed an earlier review of ISS commercialization, reported in NSIAD-99-153R, "Space Station Status of Efforts to Determine Commercial Potential," June 30, 1999. GAO also concluded that it was too soon to estimate whether commercial activity would eventually reduce the cost of operations for the ISS.

3. Information Technology

During fiscal year (FY) 2000, our investigation, audit, and inspection activities continued to find a fragmented information technology security (ITS) program without clear lines of authority, policies, guidelines, and enforcement. NASA continues to maintain separate organizations to handle classified and unclassified ITS. This separation has caused confusion and has inhibited the implementation of an effective ITS program. Separating unclassified and classified ITS has also led to duplication of effort. Several NASA Centers have an ITS official in the security office who handles computer security for classified information and another individual—usually in the office of the Chief Information Officer (CIO)—who handles computer security for sensitive but unclassified information. Confusion surrounding this separation has resulted in the expenditure of significant funds when more secure and less costly solutions were available. Additionally, this situation tends to thwart the sharing of vital threat and risk information against both classified and unclassified systems.

The Federal Bureau of Investigation reiterated our concerns in its recent report that contains numerous recommendations to address ITS weaknesses at NASA. In addition, Congress has rated NASA poorly in the ITS area, and GAO continues to find significant deficiencies. Therefore, IT is a significant management challenge.

Fragmentation. We are also concerned about fragmentation of the ITS mission area components because NASA policies and procedures do not effectively integrate computer and communication security. For the most part, NASA addresses these two components separately rather than synergistically under a single ITS program. Most of the Federal Government has adopted the National Security Telecommunications and Information System Security Committee (NSTISSC) definition of Information Systems Security, which has two primary components—computer and communications security. NASA is an observer on the NSTISSC and is bound by its issuances.

In addition to fragmenting the ITS mission area components, responsibilities for ITS have been divided among multiple Centers. While the Ames Research Center (Ames) has primary responsibility for ITS, several functions are performed elsewhere. For example, Kennedy handles one component of communication security, while Headquarters performs all other communication security functions. Further, Goddard Space Flight Center (Goddard) performs incident response, Glenn Research Center (Glenn) provides ITS training, and Marshall is responsible for firewalls. Some of the key functions are performed by one individual at these locations, with little or no backup support. In many cases, the extent and complexity of these functions require a team of ITS professionals. This multiple-Center approach leads to serious coordination problems and a lack of corporate oversight. Center CIO's do not report to the Agency CIO, and the roles and responsibilities are ill defined. When the OIG Computer Crimes Division responds to incidents, our agents are required to contact security officials at multiple locations—none of whom have total visibility into security matters.

The NASA Administrator recently established a new organization, the NASA Office of Security Management and Safeguards, to focus and advance the Agency's efforts in all aspects of NASA security. Because this organization is new, it is unclear whether it adequately addresses the fragmentation of the ITS program. We will continue to evaluate whether the new organization encompasses both classified and unclassified information, addresses both computer and communications security, and provides appropriate Headquarters authority over the Agency's security mission.

Planning. Our work this year continues to identify problems with the structure of the IT program, planning, and the implementation of IT in NASA programs and activities. For example, the OIG identified weaknesses in NASA's ITS planning efforts. We found that NASA did not have security plans for many of its special management attention[1] (SMA) systems and many of its computers that host publicly accessible web sites. In fact, major elements of one of NASA's five major IT investments did not have security plans, contingency plans, or risk assessments. For some systems that had security plans in place, NASA did not adequately address the security planning requirements of Office of Management and Budget (OMB) Circular A-130, "Management of Federal Information Resources." Common problems involved lack of information on system rules of behavior, initial and periodic training, personnel controls, identifying and reporting security incidents, continuity of service, technical security, and system interconnection. These deficiencies have reduced the effectiveness of NASA's ITS program and have increased security risks to many of NASA's SMA IT systems and other IT resources. The increased risks due to the failure to comply with Federal IT security requirements leave NASA vulnerable to security violations, both internal and external. We are continuing to conduct audit work in the area of IT security planning.

Disaster Recovery. The OIG also conducted a series of audits that focused on the adequacy of disaster recovery planning for NASA's mission-critical systems. During FY 1998-2000, we reviewed 10 mission critical systems and provided individual reports on deficiencies for each system. In FY 2000, we summarized the findings in a consolidated report that concluded NASA Center management had not placed a high priority on disaster recovery planning. While all but one system had a disaster recovery plan, each of the disaster recovery plans contained various inadequate or missing elements. The inadequate or missing elements included provisions for extended backup, disaster recovery testing, risk assessments, training of key personnel, and off-site storage. Based on our findings, it is probable that these types of deficiencies exist within many of the NASA mission-critical systems we have not reviewed. Inadequate disaster recovery planning leaves NASA's mission-critical systems susceptible to internal or external threats including natural disasters and hostile attacks.

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[1] "Special management attention" is a NASA term for information systems that are considered to be the most important to NASA in accomplishing its mission. Increased oversight of these IT systems is required due to the risk and magnitude of harm that would result from the loss, misuse, unauthorized access to, or modification of the data in a system.

Clinger Cohen. We also reviewed NASA's organizational structure for implementing the Clinger-Cohen Act[2]. We found that NASA can improve its CIO organization to more effectively implement the requirements of the Act. For example, the NASA CIO was not a full member of the Capital Investment Council. By appointing the CIO to the Council, the Agency can better comply with the Act and related guidance regarding the intended authority of the CIO position. We also found that most Center CIO representatives were not full members of Center-level program management councils. As a result, NASA lacks assurance that IT will receive appropriate emphasis in Center-level program oversight activities. The NASA CIO has also not met the Clinger-Cohen Act requirement to annually assess the knowledge and skill of senior managers in information resources management (IRM) and has not developed specific plans to remedy possible deficiencies in meeting established knowledge and skill requirements. Consequently, the Agency has not yet complied with statutory requirements and lacks assurance that executive-level personnel are appropriately qualified in IRM. The NASA CIO concurred with our findings and is taking corrective actions.

Presidential Decision Directive 63. We also reviewed NASA's planning and implementation for Presidential Decision Directive (PDD) 63. We found that NASA had not developed an adequate critical infrastructure protection plan to achieve initial operating capability (IOC) by December 31, 2000. Until NASA develops an adequate plan for achieving IOC, the Agency lacks assurance that it is complying with PDD 63 and is adequately protecting its critical cyber-based infrastructure assets. We also found that NASA's list of minimum essential infrastructure (MEI) assets contained errors and inconsistencies.[3] As a result, NASA lacks assurance that it can provide appropriate oversight of PDD 63 assessment and mediation activities. Further, NASA lacks assurance that all critical infrastructure assets will undergo appropriate assessment and mediation activities. Finally, for those assets that were incorrectly identified as MEI, NASA may expend limited resources on unnecessary assessment and mediation activities. Management either concurred or partially concurred with our findings and recommendations. We considered management's proposed actions responsive to the recommendations.

Program and Project Management. In another audit, we found that NASA lacks adequate management controls for determining whether program and project managers should incorporate independent verification and validation into their software development

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[2] In February 1996, Congress enacted the Clinger-Cohen Act to reform and improve the way Federal agencies acquire and manage IT resources. The law requires each agency head to establish clear accountability for IT management activities by appointing an agency CIO with the visibility and management responsibilities necessary to carry out the specific provisions of the Act.

[3] MEI is the minimum infrastructure necessary for an agency to conduct its core mission(s). MEI includes, but is not limited to, critical physical assets, information technology systems, and information collected, processed, transmitted, stored, or disseminated electronically. We found errors in NASA's MEI list. For example, wind tunnels at three NASA Centers were listed as physical assets. The wind tunnels should have been classified as combined physical/cyber-based assets. The MEI list also contained inconsistencies. For example, six Centers included their telephone system as an MEI asset, while four Centers did not.

projects. As a result, NASA is not assured that it can effectively mitigate potential software failures. Management has either taken or plans to take actions that are responsive to the recommendations.

Communications Security Issues. Our assessment of the ISS Command and Control Communications found that NASA has not fully considered all possible upgrade alternatives to the current ISS communications uplink encryption algorithm. Also, the options NASA has considered to date involve upgrades to ISS encryption technology, but do not provide an acceptable authentication capability. Without a strong method of authentication, the ISS could still be susceptible to receiving unauthorized command and control instructions. We believe the recommendations in our report may save NASA millions of dollars while increasing security against unauthorized commanding.

The OIG also completed an assessment of problems involving the ISS Portable Computer Systems (PCS) and the accuracy of displays developed for the PCS. We found that there is a need for an integrated product team and independent verification of displays. We also found that PCS usability should be improved and made recommendations to improve static display indicators, eliminate erroneous information, make application commands consistent, reduce cumbersome system navigation, and provide for increased equipment redundancy. Additionally, we found the ISS program did not have a coordinated, well-defined process for software engineering and software management. The lack of such a process results in numerous problems with requirements control, configuration management, cost and schedule estimates, and defect prevention.

Physical Security Controls. In prior years, the OIG identified weaknesses in physical security controls at many of NASA's major data centers. During FY 2000, we continued this effort and identified weaknesses in the physical security activities of a NASA Space Flight system and various other NASA systems that support the processing of both mission and business and restricted technology activities that require special management attention oversight. Specifically, NASA had not established or implemented procedures to ensure that controlled computing areas were adequately protected from unauthorized access. Inadequate physical access controls increase NASA's vulnerability to financial or operational losses in its IT environment.

Our inspections of physical security at Glenn, Marshall, and the Wallops Flight Facility found physical security problems including weak access controls over the facilities themselves as well as the buildings on the facilities. For example, at one Center we found 90 percent of the buildings unlocked during non-duty hours. Buildings and rooms housing high-value computer and telecommunications equipment were unlocked. Unauthorized personnel exposed vital communications systems to possible violation. At one Center, we also found a lack of updated ITS policies and procedures.

Mission Critical Systems. During FY 2000, the OIG conducted audits of several mission-critical information systems to determine whether NASA had implemented adequate controls at the host computer level. These audits focussed on security and integrity

controls to help protect NASA systems, data, and information from unauthorized access from within NASA as well as from intruders who are successful in circumventing network and perimeter controls. The audits disclosed that NASA had not implemented adequate basic controls in areas such as system access, protection of critical files, system backup and restore procedures, privileged operations controls, and system audit and monitoring capabilities. These deficiencies increased the risk of unauthorized access that could result in loss of mission support, loss of mission data, and illegal use of computer systems.

Human Capital. In a recently completed assessment of NASA's IT training and recruitment/retention program, the OIG found that NASA is not moving aggressively to ensure that all individuals are appropriately trained prior to being granted access to IT applications and systems. Instead of creating a centralized IT training function, NASA spreads its IT training and development responsibilities among several organizations. The decentralized approach contributes to funding and staffing shortfalls in the IT training program. For example, while NASA established an Expert Center for IT Security Awareness and Training at Glenn to develop Agency-wide IT training, the Agency has not provided the Center with the necessary staffing or funding to carry out its responsibilities. Instead, the Expert Center relies on a matrixed staff consisting of personnel from other organizational components. In addition, the Expert Center operates with limited funds provided by other NASA organizations. The funds do not cover the costs of personnel travel necessary to develop and evaluate training courses. The Expert Center and NASA's Principal Center for ITS located at Ames entered into a memorandum of understanding (MOU) that outlines the Expert Center's work plan and resource requirements. However, the MOU does not address the Principal Center's resource commitment and does not sufficiently include other NASA organizational components' resource commitments.

NASA has not established training goals that meet Federal requirements. For example, while OMB Circular A-130 envisions that employees be trained before allowing them access to IT systems, NASA's metrics do not meet that requirement until September 30, 2002. As a result, NASA's workforce lacks the training and awareness necessary to minimize the Agency's vulnerability to hostile attacks against its IT infrastructure.

NASA has acknowledged the need to increase the number of employees with specialized IT skills. However, NASA has not fully used all the tools currently available to ensure that IT skills are present in the right mix and locations across the Agency. For example, NASA limits its use of recruitment, retention, and relocation bonuses and allowances to recruit and retain key IT skills. Given the increase in the frequency and sophistication of hacker attacks against NASA IT systems, NASA's lack of sufficient IT skills puts the Agency at risk and could compromise its IT resources and information.

We identified the need to further emphasize training, developing, and recruiting IT personnel in FY 2000. Currently, we are drafting a report that will include recommendations that will improve NASA's ability to train existing personnel and attract and retain highly qualified IT personnel.

The work we have done in the IT area is supported by the prior information security assessment conducted by GAO and by NASA's own internal ITS review. The GAO indicated that significant management shortcomings exist in every aspect of NASA's ITS program, including risk management, implementing policy, monitoring and evaluating policies and controls, training employees, and centrally coordinating responses to security incidents. In addition to identifying deficiencies in the risk assessment procedures, the lack of adequate coordination regarding ITS activities, and the lack of a common structure for conducting ITS activities, the NASA review team also noted weaknesses in ITS policies. We believe that more work is needed in each of these areas including the provision of more ITS coverage in other NASA policies and procedures.

4. Procurement

Procurement continues to be a significant support process for all of NASA's Enterprises[4] and its overall mission. NASA's procurement obligations continued to account for more than 87 percent of the Agency's total obligations in FY 2000, just as they have for the last 10 years. NASA continues to procure more than $12.5 billion in goods and services annually, with the total amount increasing slightly in each of the last 3 years. A number of ongoing management issues, as well as recent results from audits, inspections, and investigations, dictate that procurement be considered an ongoing challenge for NASA.

Contract Management. In 1999, GAO identified NASA contract management as a major management challenge and program risk. The GAO stated, in part, that NASA lacks adequate systems and processes to oversee procurement activities and to produce accurate and reliable management information in a timely manner. NASA planned to implement an Integrated Financial Management Project (IFMP) computer system that would have alleviated the GAO concern. However, the Agency had difficulty in obtaining adequate performance by the IFMP contractor. The contractor did not deliver the promised system, and NASA issued a stop work order on March 10, 2000. As a result, NASA was forced to reevaluate the entire scope and procedure for developing and implementing the IFMP, and final implementation of the IFMP has slipped indefinitely. The GAO continues to include NASA contract management on its high-risk list due to the delay in implementing the IFMP.[5]

Human Capital. Human capital concerns also adversely affect NASA procurement. Since 1993, the number of NASA procurement personnel has decreased by 28 percent. As indicated earlier, however, the procurement obligations have consistently stayed above 87 percent of the annual NASA total obligations, and the actual dollar amount of procurements has increased in recent years. As a result, NASA now has significantly fewer procurement personnel to oversee an increasing level of procurement activity. Further, a recent NASA Office of Procurement study found that attrition of Agencywide contracting staff could be as high as 40 percent by the end of 2007. As a result, NASA faces losing significant procurement expertise, which will compound the problem of providing adequate procurement support to NASA Enterprises and individual NASA programs.

Outsourcing and Oversight. NASA is also faced with increased outsourcing of various functions and less direct procurement oversight of its prime contractors and subcontractors. NASA is outsourcing several IT functions, such as expert IT advice, specific applications, education, maintenance, aspects of software/physical security, and disaster recovery. NASA has also awarded a supplier assurance contract to have a contractor perform quality assurance surveillance at supplier locations. NASA also recently outsourced contract

[4] NASA Enterprises are: Aerospace Technology, Biological and Physical Science, Earth Science, Human Exploration and Development of Space, and Space Science.

[5] The GAO discusses NASA's contract management in "Observations on the National Aeronautics and Space Administration's FY 1999 Performance Report and FY 2001 Performance Plan," B-285486, June 30, 2000.

closeouts. Outsourcing brings with it considerable risks unless the Agency carefully provides for adequate internal controls over such functions and the contractors that perform the service.

In addition, NASA is placing more reliance on its prime contractors and other Government agencies to provide oversight of subcontractor operations. NASA uses a risk-based acquisition management approach to determine how much contractor surveillance is necessary. NASA also relies on the Defense Contract Management Agency (DCMA) and the Defense Contract Audit Agency (DCAA) for oversight reviews and audits of contractors. Both agencies, however, have undergone major reductions in staff and have, therefore, experienced a significant loss of expertise. As a result, NASA contracting officers must remain vigilant over the contracts for which they are responsible and request specific reviews of areas of risk.

Electronic Commerce. NASA is also moving rapidly to expand procurements that involve electronic commerce. NASA is making purchases through the use of electronic catalogs; the Internet; purchase, fleet, and travel credit cards; and other electronic means, such as just-in-time (JIT) purchase systems. NASA is giving purchase authority to individual employees as compared to using the traditional procurement-office method of the past. NASA employees conducted more than 400,000 credit card transactions, involving more than $125 million in purchases, in FY 2000. The number of transactions has increased significantly from prior years and is expected to further increase. NASA is also increasing the number of procurements through electronic catalogs and JIT purchasing systems. Further, NASA is using the Internet for rapid, low-cost, delivery of procurement information to a broad audience. NASA is posting synopsis and solicitation information on the Internet and is expanding its Internet services for customers. While NASA is taking advantage of newer technology to relieve some of the pressure from procurement downsizing, it must ensure that adequate internal controls exist over electronic procurements that generally involve fewer paper approvals, documented support, and supervisory oversight.

Results of Audits and Other Reviews. Recent and ongoing audits, inspections, and investigations continue to find problems in a variety of procurement areas. The problems include inadequate justifications for contractor and subcontractor noncompetitive procurements; lack of adequate market surveys, technical analyses, and cost/benefit evaluations; improper use of support service contracts; and inadequate contract audit services. For example,

- Audits at separate NASA prime contractors or subcontractors found multiple incidents of inadequate justifications for noncompetitive procurements.

- Audits of two major NASA programs identified a lack of adequate cost analyses for significant contract actions.

- An audit of Phase II of the Space Flight Operations Contract found that NASA did not perform a cost-benefit analysis. The lack of a cost-benefit analysis precluded proper determination of contract requirements and establishment of a baseline with which to later measure accomplishment of potential cost savings and other goals. We also found that NASA cannot be assured it received fair and reasonable pricing because the FY 1998 flight rate credit analysis was not fully documented in the contract file in accordance with FAR requirements. Consequently, NASA cannot be assured that the $33.3 million flight rate credit represents a full contract price reduction from the two cancelled flights.

- An inspection found that a proposed NASA sole-source procurement at a major university lacked sufficient justification and that no cost/benefit analysis was performed as required by Agency policy.

- An ongoing inspection at one NASA Center found the inappropriate use of contractor personnel for general administrative work through support service contracts.

- An audit of six of NASA's largest contracts found that contractor insurance pension reviews were inadequate. According to a DCMA directive, costs of insurance and pension programs materially affect contract price and are high risk because the indirect costs of these programs usually exceed 50 percent of direct labor costs. Four of the six contractor insurance pension review reports addressing the six NASA contracts lacked a complete analysis of insurance costs, and three of the six reports were not issued in a timely manner.

- An audit on the impact of the Boeing Company's restructuring on NASA identified that the Agency has not received a benefit from either the restructuring or a related advance agreement with the DCMA. On December 17, 1999, Boeing entered into an advance agreement with the DCMA to reorganize and restructure Boeing as a result of previous acquisitions and mergers. Our audit addressed the disparities resulting from this agreement between the savings accruing to Boeing and the Department of Defense (DoD) and those accruing to NASA.

  We found that NASA (1) received an inequitable share of the projected restructuring savings and (2) has little assurance that it will realize any actual savings from Boeing's restructuring. In addition, NASA could incur increased costs of as much as $115 million due to changes in accounting procedures and cost allocation methods related to Boeing's restructuring. The Agency has not benefited because (1) NASA does not have the legislation and implementing guidance similar to DoD's regarding external business restructurings, (2) NASA was not actively involved in reviewing and negotiating Boeing's restructuring proposal, and (3) DCMA considered Boeing's accounting and cost allocation changes separate and distinct from its restructuring efforts and did not include these items in negotiating the advance agreement. As a result, Boeing's commercial and defense customers

> will primarily benefit from its restructuring, changes in accounting practices, and cost allocation methods while NASA will absorb most of the costs. NASA has an opportunity to recover about $64.7 million in contract offsets as a result of DCMA's efforts to mitigate some of these cost increases. The contract offsets are actual dollar savings for NASA and will have a positive impact on the Agency's budget. We have made several recommendations to improve NASA's position on this and future restructuring agreements.

Further, the number of criminal investigations involving procurement fraud has increased in the last year. The investigations resulted in 31 convictions or civil settlements for kickbacks (18), civil false claims (6), product substitution (2), cost mischarging (1) and other major or program fraud (4). In March 2000, for example, a NASA contractor agreed to settle a lawsuit involving unallowable sale-leaseback charges to contracts. The contractor agreed to pay back $38 million. In addition, the majority of the kickback investigations involved buyers or other procurement officers working for NASA prime contractors or major subcontractors. The investigation results represent an increase from the prior year during which 22 convictions or civil settlements for procurement fraud were realized.

5. Fiscal Management.

Recently completed and on-going OIG audits have identified problems with obligations management, IFMP, and implementation of full-cost procedures. In additional, NASA made a significant error in preparing the 1999 Statement of Budgetary Resources. These problems indicate that fiscal management continues to be a significant management challenge for the Agency.

Obligations Management. Our audit of Matching Disbursements to Obligations found that disbursements are not properly matched to the originating obligations. In accordance with fiscal law, NASA must ensure that appropriated funds are used for the purposes authorized by Congress and must have effective management control over obligations and disbursements in order to maintain appropriation integrity. Disbursements for contract items and services received should be matched to the obligations citing funds authorized to make the payments. We found the condition existed because (1) Agency financial management policies and procedures match disbursements to the oldest recorded obligation regardless of the correct appropriation and program year, (2) financial management officials incorrectly believe the proper cost accrual procedures ensure the correct appropriation is used, (3) financial management personnel are not provided specific accounting information to allow them to determine which obligations to charge, and (4) NASA policy does not require that obligations and disbursement be properly matched.

Because disbursements were not properly matched to obligations, authorized funds may not have been used for their authorized purposes. Our audit found that of the 36 reviewed disbursements totaling about $44.8 million, about $44.7 million may have been charged to the incorrect appropriation, which may have resulted in violations of fiscal law. In addition, systematically liquidating obligations based solely on the use of oldest funds first can impact the Statement of Budgetary Resources because the statement is reported by appropriation. Therefore, disbursements as reported in the statement could be in error because the disbursement would not generally relate to the obligation charged.

Management initially nonconcurred with our recommendations to revise the (1) Financial Management Manual (FMM) to require disbursements to be properly matched with obligations and (2) the NASA FAR Supplement to require contractors to submit obligation data with their invoices and to have procurement offices provide payment instructions to enable the charging of disbursements to the obligations consistent with the performance of work on contracts. On October 26, 2000, NASA management and the OIG collaborated on a proposed revision to the NASA FMM that addressed each of the open recommendations. As a result of this effort, all the recommendations have been resolved. One recommendation remains open pending formal revision of the FMM and implementation of the agreed-upon requirements by NASA Centers.

Our audit of Internal Controls over Processing Deobligations found that financial officials at two Centers did not adequately document deobligation transactions for more than half of the transactions reviewed. GAO “Standards for Internal Control in the Federal

Government," specify requirements for recording and documenting transactions. In addition, the NASA FMM requires that all obligations be supported by documentary evidence. However, the FMM has no specific documentation requirement for deobligations. In addition, neither of the two Centers had specific financial guidance for processing and documenting deobligations.

Lack of adequate documentation to support financial transactions is a serious internal control weakness that can result in inaccurate and unreliable financial data. Because the documentation was not available to support the deobligation transactions, we interviewed accountants, budget and program analysts, and researchers associated with the deobligation to determine additional details. These personnel explained that the deobligations were made to:

- fully obligate an expiring reimbursement from another Federal agency or an expiring NASA appropriation,
- distribute obligations and costs to benefiting activities,
- correct prior transaction errors and changes in accounting codes,
- close out contracts, and
- meet obligation and cost metrics.

In many cases, NASA personnel were unable to provide sufficient explanations to validate the transaction. We are particularly concerned that some deobligations were made solely for the purpose of meeting Agency metrics. Management needs to ensure that transactions are properly authorized and adequately documented. Adequate documentation consists of documents such as contract modifications, purchase requests, or other documents that provide a complete, detailed narrative explanation of why the transaction is requested. Supporting documentation should also include evidence of management's approval, the approval date, and appropriate signatures. Because of the lack of documentation to support the transactions at the two Centers we reviewed, we could not attest to the validity and amount of deobligations valued at about $7.4 million.

We made four recommendations to improve controls over processing and documenting deobligations. Management's comments on two of the recommendations were responsive, but the recommendations will remain open until NASA completes the planned corrective action. Management nonconcurred with the two remaining recommendations. We have asked management to reconsider its position and submit additional comments.

Audit field work is continuing in the area of obligations management. We are reviewing selected obligating transactions at two Centers to evaluate controls over the establishment and adjustment of obligations. Specifically, we are evaluating the supporting documentation and the bona fide need for the selected transactions. We are also reviewing yearend transactions to identify cases of excessive forward funding of uncosted obligations.

In addition, we are reviewing the cause and impact of NASA's overstatement of about $643 million in recoveries of prior year obligations and obligations incurred as reported on

the 1999 Statement of Budgetary Resources. Our review indicated that the error occurred because financial management personnel reporting to the Chief Financial Officer (CFO) misinterpreted guidance contained in OMB Circular A-34, "Instructions on Budget Execution." NASA financial personnel made accounting entries that incorrectly include disbursements charged against obligations of prior year appropriations as recoveries of prior year obligations. Additionally, although NASA's independent public accounts were aware of the variance, they did not discover the error during their annual audit because they did not conduct tests to determine the validity of the reported amount. While the amount of the misstatement is material, a budgetary impact may not have resulted from the error. However, the error pointed out, once again, that significant uncertainty exists regarding how to properly manage obligations.

IFMP. As stated under Challenge 4, Procurement, NASA continues to experience difficulty in implementing IFMP, a NASA-wide, fully integrated, transaction-driven financial management system intended to provide full-cost accounting and other budget information. NASA is redesigning its implementation plan and selecting its implementation service provider for its core financial systems software. Any delay in implementing the new system will result in continued reliance on outdated systems that do not provide the financial and management information that the Agency needs. Also, NASA will not be able to implement full-cost management as planned and will instead incur substantial costs to maintain legacy systems that the new system would replace.

6. Program and Project Management

The Agency faces significant challenges in program and project management. On April 3, 1998, NASA issued NASA Procedures and Guidelines (NPG) 7120.5A, "NASA Program and Project Management Processes and Requirements." This new guidance substantially revised NASA management procedures at a time when the Agency had many programs and projects that were initiated under earlier procedures. NASA issued the new guidance to improve program and project management by (1) including all parties involved from the beginning of the program or project, from solicitation to delivery of the end item, and (2) placing more responsibility/risk in the hands of the contractor which, in turn, will reduce the amount of Agency oversight. Further, the intent of the new policy is to support the accomplishment of programs and projects (consistent with the Agency's strategic plan) on schedule and within budget while meeting the needs of stakeholders and customers. The tailoring of the NPG should provide a mechanism to encourage and achieve "faster, better, cheaper" products while meeting customer expectations.

During this transition period (April 1998 to the present), considerable risk existed, and continues to exist, that a noncompliance could occur that could have a material impact on the success of NASA programs. Over the last 30 months, we have evaluated the causes of various program and project management issues on NASA contracts managed under the new NPG. From September to December 1999, the Agency was revising the NPG when two of the Mars missions failed within during this same time. This resulted in NASA's decision to revisit the faster, better, cheaper process and to assess the effectiveness of NPG 7120.5A. A NASA Independent Assessment Team was commissioned in March 2000 to define a plan to mitigate the root causes of failures that were identified in various reports on NASA Management (including the Mars Failure reports) and to enhance the probability of success on future missions. We will continue to focus on the effectiveness and efficiencies of the revised NPG. We will evaluate whether the new management system improves cost and schedule performance for the Agency's major programs/acquisitions. In addition, we will recommend process improvements and assess their applicability to improving the operations of Agency functions.

In addition, the effects of downsizing the Agency's acquisition workforce and increased reliance on contractor support (see Challenge 4, Procurement) present new challenges that NASA must monitor until full implementation of the new NPG.

The revised NPG 7120.5A should emphasize contractor performance monitoring and technology transfer. The current NPG requirements for performance monitoring consist only of reporting assessments of contractor performance to the contractor and maintaining records in accordance with established policy. We believe the NPG should include specific requirements related to technical monitoring, communications, and contractor performance. Based on our FY 1996 review of new technology reporting, we found several deficiencies in NASA's technology transfer and commercialization process. We recommended a complete reassessment of the new technology reporting process including (1) defining an active role for NASA senior management, (2) developing a detailed

implementation strategy, and (3) providing sufficient resources to implement the new strategy. Management concurred with our recommendations and has implemented corrective actions. Consistent with these recommendations, NPG 7120.5A should be revised to incorporate the requirements and responsibilities of program and project managers regarding new technology reporting.

NASA has established an NPG 7120.5A Working Group (Group). The Group is composed of various Headquarters and NASA Center personnel. The Group meets periodically to address recommended changes, revisions and suggestions to improve the overall program and project management guidance in NPG 7120.5A. For example, the NASA OIG has made formal recommendations, in several audit reports that the group has discussed and implemented. These are discussed below.

While NPG 7120.5A has been issued, many other NASA directives should be issued or revised to support effective program management. For example, in 1997, NASA issued NASA Policy Directive (NPD) 9501.3, "Earned Value Performance Management," to establish the basis for applying earned value management (EVM) to contracts. However, to effectively use EVM as a management tool, it must be an integrated part of program and project management. EVM is not currently consolidated as an overall program and project management responsibility. The fragmentation of the policy results in unnecessary separation of authority for EVM policy, which has been delegated to the CFO, while the day-to-day responsibility for EVM implementation rests with program and project managers. We recommended that management revise EVM procedures and issue EVM policy as program and project management directives and guidance. NASA agreed to (1) strengthen EVM guidance by revising both NPG 7120.5 and NPD 9501.3 and (2) designate Marshall as the lead Center for EVM. This action satisfies the intent of our recommendations, which will remain open until management revises the policies. In addition, NPG 8840, "NASA Procedures and Guidelines for Implementation of the National Environmental Policy Act (NEPA) and Executive Order 12114," when issued, will establish standard procedures for implementing NEPA and the Agency's overall environmental planning process. These processes and procedures are important for program and project management, but NPG 8840 has been in draft for more than a year and still has not been issued. Also, the Agency plans to revise the NASA FAR Supplement to include various risk management considerations. The change will encompass safety, security (including IT security), health, export control, and environmental protection within the acquisition process. While these are important program and project management considerations, the change will require several months to incorporate into policy and implement.

We have issued several audit reports that identify program and project management issues that range from inadequate Contracted Advisory and Assistance Services from DCAA and DCMA to a lack of NASA oversight on its major programs and projects. These issues were attributable not only to contracts awarded under the new NPG but also to those being managed under earlier policy requirements. The following paragraphs discuss the types of

program and project management issues that we reported and believe provide strong support that program and project management is considered a significant area of management concern.

Independent Cost Estimating Capability. After a 1996 reorganization, NASA lost its independent cost estimating function as cost estimators left and were not replaced. NASA recently took steps to reestablish this capability by adding eight cost estimators to the Independent Program Assessment Office at the Langley Research Center (Langley) and by establishing a Systems Management Office with an independent cost estimating capability at each Center. However, the audit found that NASA's reporting and funding structure for independent cost estimating may provide no assurance that estimates are independent in fact and/or appearance. The audit also showed that NASA has not identified the cost estimating and cost analysis function as a discipline with a specific job series, has not established career development plans for its cost estimators, and does not have a requirement to develop independent cost estimates at all major reviews of programs and projects.

NASA concurred with our recommendation to require independent cost estimates at all major reviews and to develop core training requirements for cost estimators. However, management nonconcurred or partially nonconcurred with our recommendations to provide for direct reporting of independent cost estimates to the approving official, to establish an independent funding source for all independent cost estimating activities, and to identify a specific job services for cost estimators and analysts. We are working with management to resolve the issues.

Subcontractor Technical Performance. Our audit determined that the Jet Propulsion Laboratory (JPL) needs to improve oversight of subcontractor technical performance. JPL has not adopted the practice of performing engineering and quality audits as prescribed in NASA policy. As a result, subcontractors have incurred excessive costs to correct technical problems that could have been prevented or mitigated to some extent. We recommended that NASA management direct the JPL Director to revise current project management policies to require project management assessment and monitoring of subcontractor procedures. Management partially concurred with the recommendation. We are working with management to resolve the issues.

Space Station Corrective Action Plans. Boeing's corrective action plans and the Johnson Space Center's (Johnson's) oversight of the plans need improvement. The Space Station Program has experienced a continued deterioration in cost and schedule performance after a September 1997 adjustment of the contract cost baseline, but variance analyses and corrective action plans have not been effectively utilized to control the negative variances. Additionally, Johnson did not provide effective oversight of Government surveillance of the Earned Value Management System, including the verification of corrective actions related to cost and schedule variances. As a result, the Space Station Program lacked assurance that negative variances were identified and corrective actions were taken to reduce associated risk. Further, Johnson did not ensure that Boeing took corrective actions

on conditions noted since at least March 1997 to properly prepare and submit Variance Analysis Reports. As a result, Variance Analysis Reports may not adequately identify cost and schedule risks. (Also see Challenge 3, International Space Station.)

Earth Observing System (EOS) Common Spacecraft Planning and Management. In general, the EOS contractor-planned schedule and cost performance is adequate. However, program management can be improved in the areas of quality control and communication of award fee determinations. Specifically, NASA does not have assurance that the DCMA is performing required quality assurance services. Further, DCMA did not finalize and submit its Agency Quality Assurance Plan for contract NAS5-32954 in a timely manner. Although DCMA has submitted the plan, NASA has not formally approved it. Finally, DCMA has not submitted required status reports to the NASA Flight Assurance Manager at Goddard. The information is necessary to ensure that quality assurance issues are addressed in a timely manner.

X-33 Cooperative Agreement. NASA has had limited success in the use of a cooperative agreement on a major program. (Also see Challenge 7, Launch Vehicles.) The X-33 Program cooperative agreement represents NASA's "new way of doing business," that is, faster, better, cheaper; partnering; less documentation; fewer staff; and reduced oversight. While the cooperative agreement has provided certain benefits including faster award and greater flexibility in managing the X-33 Program, we found its use has contributed to a variety of program management problems. The problems have adversely affected X-33 Program planning, execution, resource management, and property control NPD 7120.4A, "Program/Project Management," and NPG 7120.5A state that the directives apply to all programs and projects. However, Agency guidance on use of cooperative agreements with commercial firms, NPG 5800.1D, "Grant and Cooperative Agreement Handbook," does not specifically require that program and project managers comply with program management requirements when a cooperative agreement is used for a major system. NPG 5800.1D guidance on the use of cooperative agreements with commercial firms was not designed for major (large dollar) programs like the X-33. Consequently, early in the X-33 Program there was some uncertainty as to which program management requirements applied to the X-33 under the "new way of doing business." We recommended that management revise NPG 5800.1D to include guidance requiring that program and project managers entering into partnering agreements with commercial firms for the design and development of major systems must comply with NPD 7120.4A and NPG 7120.5A. Management concurred with the recommendation and is taking appropriate corrective actions.

An important element of effective program and project management is cost analysis. As noted in Issue 5, we have reported deficiencies in cost analysis procedures on the X-33 Program and other Agency initiatives. We have made recommendations for management to modify NPG 5800.1D and NPG 7120.5A to include a well-supported cost analysis and quantification of cost risk.

Advanced X-RAY Astrophysics Facility (AXAF). Overall, NASA responded adequately to the initial AXAF[6] launch delay and has focused additional attention on contractor performance. The AXAF launch delay will increase contract costs by an estimated $28.8 million. The initial delay was caused by problems in software development and inadequate time scheduled for integration and test activities for the AXAF flight and ground software. When software development was identified as a high risk, Project officials did not update the AXAF risk management plan NASA policy did not require the plan to be updated. Also, NASA did not assign personnel with software expertise at the contractor location. However, when the delivery delay became known, NASA management took action to minimize the impacts and adjusted the contractor award fee to reflect actual performance. We made recommendations for management to modify NPG 7120.5A to include a well-supported cost analysis and quantification of cost risk. NASA is taking action to improve cost estimating and risk analysis procedures.

[6] AXAF was renamed the *Chandra X-ray Observatory*.

7. Launch Vehicles

The next-generation Reusable Launch Vehicle (RLV) concept is an attempt to reduce the cost of access to space. The original RLV was the Space Shuttle. As part of its Space Transportation mission, NASA is now looking towards a second-generation RLV to reduce launch costs. The X-33 and X-34 and other Space Transportation programs will provide a number of flight tests of key technology demonstrations needed for the next-generation RLV system.

The X-33 Program is undergoing a major restructuring due to the failure of the composite hydrogen tank last fall. Current plans call for the X-33 Program to replace the failed composite tank with an aluminum tank. In addition, lessons learned from failures in other programs have prompted program officials to reexamine the level of insight that NASA had into the program and the need for increased risk management. Our audit of the X-33 Cooperative Agreement found that use of a cooperative agreement contributed to a variety of program management problems, which adversely affected X-33 Program planning, execution, resource management, and property control. (Also see Challenge 6, Program and Project Management.) Under the cooperative agreement, NASA's share of the cost was fixed at $941 million, while the industry partners were to contribute the remaining costs of the program. NASA and Lockheed are currently negotiating an X-33 "recovery plan." However, negotiations have been difficult, particularly over who should pay for additional costs to complete the program. Under the cooperative agreement, either party can terminate the agreement if the issues are not resolved.

Our audit of the X-34 Technology Demonstrator found that Marshall had not established mission-specific requirements for each of the 27 planned X-34 flights, and had not properly documented numerous changes to the proposed flight test program. Subsequent to our audit, the X-34 Project began undergoing a major restructuring to increase the likelihood of mission success. Project officials are proposing additional tests and other risk mitigation factors. Project officials are also examining a variety of enhancements as part of this restructuring. The estimated cost of the X-34 Project (including the cost of the Fastrac engine and approximately $2 million in experiments) totaled about $186 million. However, proposed changes in the program could significantly increase the amount of time and money needed for the project.

Low-cost space transportation remains a key enabler of a more aggressive civil space program. Reducing the cost of access to space is one of NASA's top priorities. The X-33 Program and the X-34 Project are major efforts towards this priority. The restructuring of these programs could increase the costs of these programs and extend the time needed to successfully complete the efforts. NASA proposes to spend about $4.5 billion on the second-generation RLV Program over the next 5 years. The X-33 and X-34 will be expected to compete with other proposals for additional funding from the second-generation RLV Program.

Commercialization. We recently issued a draft report on Space Shuttle Payloads and identified a pricing issue that has implications for commercialization of the Space Shuttle. For primary payloads, NASA priced Space Shuttle flights for prospective commercial customers under the "reasonable customer incentives" provision of 42 United States Code (USC) § 2466 but has not established a pricing system as required by that statute. Without a pricing system, NASA does not have a baseline for determining reasonable customer incentives and, consequently, may be offering Space Shuttle flights at prices that are less than intended by the statute. Also, NASA has not established a definition for the "fair value" that must be charged to Department of Defense customers in accordance with 42 USC § 2464. In addition, for a flight offered to the Air Force for $200 million, NASA has not considered the value (at least $306.4 million) of the service to the recipient, as required by 31 USC § 9701. Without a definition of fair value, interested third parties, such as OMB and the Congress, cannot determine whether a price is fair and reasonable. Further, NASA may be greatly subsidizing a fully funded Air Force mission.

We recommended that NASA analyze the statutes and directives that address user charges; establish a pricing system with structured user charges; and in consultation with OMB and the Congress, establish a definition for fair value. These actions would provide prospective customers a clear and consistent price schedule for use of the Space Shuttle. We also recommended that NASA modify the authorization to United Space Alliance (USA) to seek only reimbursable commercial customers. This action would help ensure that USA does not solicit other Government agencies as customers and offer a price lower than what NASA would charge. In addition, we recommended that NASA accept only those offers for Space Shuttle commercial use that meet the user fee requirements. This action would ensure that the Agency does not recover a lower reimbursement than intended by statute. Finally, in response to management's comments on the draft report, we recommended that NASA include in the pricing system its methodology for determining additive cost as defined by 42 USC § 2466b. This action would help ensure that the Agency does not charge less than additive cost, which could be significantly more than the marginal cost for an added flight because of the statutory requirement to include fixed costs.

Management did not concur with the recommendations. Management stated that from the inception of the Space Shuttle, NASA has been involved in fashioning the statutes, regulations, and policies governing the Space Shuttle and has applied them appropriately in pricing Space Shuttle launch services. The policy as it is now structured meets national goals and customer needs and is fully consistent with statutory requirements. Attempting to establish pricing formulas for all conceivable cases would serve no purpose and risks compromising the needed flexibility afforded by statute. We are attempting to resolve the recommendations with management before issuing the final report.

8. Technology Development

The National Aeronautics and Space Act of 1958 (Space Act) charges NASA with "the improvement of the usefulness, performance, speed, safety, and efficiency of aeronautical and space vehicles." To achieve this goal, NASA, often in partnership with industry and academia, researches and develops new aeronautics and space technologies.

The emphasis NASA has placed on technology development has varied over time and differs among the Agency's Enterprises. For example, NASA's aeronautics programs have a long tradition of research and technology development in support of the aeronautics industry. Although NASA's early space efforts were successful in developing new technologies, NASA's focus on the Space Shuttle; ISS; and large, low-risk science missions during the 1970's and 1980's resulted in the development of relatively few new space technologies. During the 1990's, NASA increased its space technology development efforts and its use of space technologies developed by the growing commercial space industry and the Department of Defense.

The following recent major changes have drawn our attention to NASA's technology development activities:

- The NASA Office of the Chief Technologist has been abolished, and the Agency's technology development efforts are now the responsibility of the Office of Aerospace Technology.
- Consolidation in the aerospace industry has left the United States with only one builder of large commercial aircraft. This raises issues about NASA research and development in support of the commercial aircraft industry.
- NASA has canceled its high-speed aeronautics research program.
- The commercial space industry continues to thrive, driving new space technology development in many areas.
- The ISS era has begun, opening up an opportunity for increased in-space research and technology development.
- NASA has created an Internet-based *Technology Portal* highlighting commercial and educational technology development and applications

Our future reviews of NASA technology development activities will focus on the following themes:

- Are appropriate controls in place on NASA's cooperative technology development programs (for example, Small Business Innovative Research, Small Business Technology Transfer Research, and cooperative agreements)?
- Is NASA taking into consideration the advice of its advisory bodies concerning technology development?
- Is NASA making appropriate use of technologies developed outside the Agency? Is NASA duplicating technology research that has been (or would have been) developed outside the Agency?

- Is NASA effectively transferring the technologies it develops to U.S. companies?
- Is NASA's technology development organization appropriately structured to ensure effective technology development? Are NASA's Enterprises cooperating in research and technology development?
- Are NASA's technology demonstration programs being compromised by added requirements unrelated to technology demonstration?
- Is funding intended for technology development being diverted to other programs?
- Is NASA adequately ensuring that the technologies it develops are not misappropriated? Are trade secrets being protected? Is technology development information appropriately secured?
- Are NASA technology demonstrations unfairly distorting the marketplace?
- Does NASA have the human capital necessary to conduct or oversee technology development programs?
- Are the Agency's technology development activities adequately aligned with and supportive of its expanding commercialization activities?

9. International Agreements

One of the goals of the National Space Policy is to promote international cooperative activities that are in the national interest. The Space Act gives NASA statutory authority to enter into binding agreements with foreign entities. Since its inception, NASA has entered into about 3,500 international agreements. These agreements span every NASA Enterprise and involve numerous programs and projects—the most notable being the ISS Program. NASA's international agreements also provide for foreign nationals and representatives to have access to NASA facilities and information. NASA's Office of External Relations is responsible for determining the appropriateness and level of that access. Inherent in a decision to grant foreign personnel access is the risk of sabotage or disclosure of information of military or economic importance. Several audits and other reviews have found weaknesses related to foreign national visitors at NASA facilities and the export of NASA technology. Therefore, we consider access to NASA technology and facilities a significant management challenge.

Access to Technology. NASA is a high-priority target of unlawful intrusions from various sources. The OIG's past and current work has identified a need for NASA to strengthen its internal controls sufficiently to detect both internal theft and inadvertent loss of NASA technology and research. As a U.S. Government agency on the leading edge of space and aeronautics technological development and international cooperation, NASA must be a responsible exporter in its international activities. NASA's international activities often involve the transfer of commodities, software, or technologies to foreign partners not only by NASA, but also by its contractors. The transfers are generally subject to export control laws and regulations, regardless of whether they occur in the United States, overseas, or in space. Export controls are imposed on such transfers and activities to protect the national security and to further U.S. foreign policy objectives.

We conducted an audit of contractor control of sensitive technologies (controlled technologies) to assess Government oversight of contractor processes for exporting controlled technologies. The audit identified that NASA personnel responsible for managing major programs at Goddard, Johnson, and Marshall were unable to readily identify the types and amounts of NASA-funded controlled technologies that contractors export. As a result, NASA lacks assurance that contractor export activities are performed in accordance with applicable laws and regulations. The audit also identified potential export violations by two of the three NASA contractors who were exporting NASA-funded controlled technologies to foreign contractors in furtherance of the ISS and Space Shuttle External Tank programs. NASA did not direct or seek these exports. Consequently, the contractors bear responsibility for full compliance with export laws.

We recommended that NASA management include guidance in either a NASA FAR Supplement amendment, Procurement Information Circular, or NASA Procedures and Guidelines that all appropriate NASA contracts require the contractors to deliver (1) a plan for obtaining any required export licenses to fulfill contract requirements, (2) a listing of the contractor licenses obtained, and (3) a periodic report of the exports effected against those licenses. We also recommended revision of the draft NASA Policy Directive to

incorporate the oversight responsibilities of appropriate NASA officials for those cases in which NASA or its contractors obtain export licenses on behalf of a NASA program. Management concurred with both recommendations and is taking responsive corrective actions.

We conducted another audit to determine whether major contractors have established adequate controls over controlled technologies to preclude unauthorized or unlicensed exports. The audit identified that Boeing may not have complied with applicable export laws and regulations when exporting controlled items on behalf of the ISS Program. Specifically, Boeing was unable to readily produce records related to exports of controlled technologies. Further, on two of the six NASA-obtained export licenses related to the ISS, Boeing potentially effected exports of controlled technologies beyond the scope of the licenses. This condition existed because Boeing did not have effective company policies in place with regard to exports. In addition, NASA does not provide oversight of Boeing's export control program, even though NASA is the licensee for several ISS-related export licenses. As a result, exports of controlled technologies by Boeing in support of the ISS Program have been effected in potential noncompliance with U.S. export laws and regulations.

We recommended that management require Boeing to establish an appropriate export control program and a detailed, company-wide export policy that comply with applicable laws and regulations prior to authorizing Boeing to utilize NASA-obtained export licenses on behalf of the ISS Program. We also recommended that management periodically review both Boeing and its subcontractors' export control programs to ensure that exports effected against NASA-obtained licenses in support of the ISS Program are being accomplished in accordance with applicable U.S. export laws and regulations. Management questioned whether some of the examples detailed in the report were, in fact, export violations. We reaffirmed our position that the examples of export shipments detailed in the report could represent possible export violations because of the disparities in explanations provided by management and the inconsistencies in the available supporting documentation. Management concurred with both of the report's recommendations and planned responsive corrective actions.

Access to NASA Facilities. The Space Act, as amended, states that NASA shall conduct its activities with an objective of cooperating with other nations. This cooperation has involved hosting foreign national visitors at its installations. The Space Act provides for the NASA Administrator to establish the necessary security requirements, restrictions, and safeguards for hosting foreign national visitors to protect the national security interests of the United States. The Defense Security Service reported in its 1998 publication, "Technology Collection Trends in the U.S. Defense Industry," that 37 countries were associated with seeking U.S. technologies in 1997. The report states that the second most frequently used technique for collecting technological information was foreign national visits to U.S. facilities and that inappropriate conduct during visits was the second most frequently reported method of operation. As of April 1999, NASA had approximately 1,383 foreign national visitors at 11 Centers.

An OIG audit of Foreign National Visitors at NASA Centers found that controls are in place over access to information by foreign national visitors. However, controls over access to NASA Centers by foreign national visitors need to be strengthened and uniformly applied on an Agencywide basis. The audit showed that controls over access by foreign national visitors varied among Ames, Goddard, Johnson, and Langley. Disparities among the four Centers related to (1) which foreign nationals were controlled, (2) the types of Government records checks made, (3) how visitors were escorted once on-site, and (4) how foreign national visitors were badged. The Agency also lacks a foreign national visitor management information system. Improvements are needed to ensure that NASA Centers and information are adequately protected against unauthorized access by foreign national visitors.

We recommended that NASA Management (1) revise the definition of a foreign national in NASA policy guidance, (2) revise existing policy to establish NASA-wide requirements and procedures for obtaining National Agency Checks and for escorting foreign visitors, (3) establish a NASA-wide policy for badging foreign nationals, and (4) develop and implement a NASA-wide management information system to support the foreign national visitor program. Management concurred with the recommendations and planned responsive corrective actions.

10. Environmental Management.

Environmental Management is a significant management challenge due to serious concerns related to cost sharing, compliance with the National Environmental Policy Act (NEPA) and nuclear reactor decommissioning costs.

Cost Sharing. In audit reports issued in 1997 and 1998, we recommended that NASA pursue cost sharing and cost recovery agreements with JPL and the Santa Susana Field Laboratory (SSFL). While NASA has made slow progress in negotiating cost sharing and cost recovery agreements for the JPL, negotiations have not begun for the SSFL. According to Agency management, NASA has limited grounds on which to require other Government agencies to negotiate cost sharing agreements for Resource Conservation and Recovery Act (RCRA) sites. Management also stated that a DCAA finding allows contractors to charge the environmental clean up costs to the Government through general and administrative (G&A) expenses.

We disagree with management's position. The Comprehensive Environmental Response, Compensation, and Liability Act and RCRA laws and regulations provide bases for negotiating fair cost sharing agreements between Government agencies and have been used in such negotiations. For example, NASA negotiated fair cost sharing agreements with the Tennessee Valley Authority officials for an RCRA site in Mississippi and with the U.S. Army Corps of Engineers for a RCRA site at Wallops Flight Facility in Maryland. Further, DCAA recently reported that allowing contractors to charge environmental clean up costs through G&A expenses does not stop two or more Government agencies from negotiating a fair cost sharing agreement for the Government's share of the liability to clean up a contaminated site. DCAA also reported that contractors cannot charge environmental costs to the Government through G&A expenses if they have been negligent or if contractors have broken environmental laws and regulations. We also are exploring with the Environmental Protection Agency options available to agencies such as NASA for cost sharing and cost recovery concerning contaminated sites being cleaned up under RCRA laws and regulations.

Management has also been slow in complying with Agency policies established as a result of a 1997 GAO report[7] concerning the identification of principal responsible parties (PRP's) and negotiating cost sharing and cost recovery agreements. We recently issued a draft audit report on Cost Sharing for Environmental Cleanup Efforts, stating that NASA has not conducted the preliminary analyses necessary to start the PRP identification and cost sharing agreement process for many of NASA's contaminated sites. As a result, NASA has not identified all contaminated sites for which the Agency should be seeking cost sharing or cost recovery arrangements. The sites awaiting completion of a preliminary or full PRP analysis are currently estimated to cost about $149.2 million to clean up, of which we estimate that NASA could avoid at least $47.1 million through cost sharing.

[7] GAO issued Audit Report GAO/NSID-97-98, "Environmental Cleanup Costs: NASA is Making Progress in Identifying Contamination, but More Effort Is Needed," in June 1997.

Further, the Institutional Program Offices[8] (IPO's) generally were not involved when a preliminary or full PRP analysis had been performed. Omitting the IPOs from the process negates a key management control.

Compliance with NEPA. We recently performed an audit to evaluate the Agency's compliance with NEPA. One of the first major Federal environmental laws enacted in the United States, NEPA is the national charter that established environmental goals and policies for the protection, maintenance, and enhancement of the environment. NEPA mandates that all Federal agencies consider the effects of their actions on the environment as early as possible and requires Federal agencies (1) to gather information about the environmental consequences of proposed actions, (2) consider the environmental impacts of those actions to assist in making environmental decisions, (3) consider alternatives that avoid or reduce adverse environmental impact, and (4) keep the public informed. In short, NEPA requires Federal agencies to examine and disclose the potential environmental impact of proposed actions before commencing those actions.

The NEPA requirements necessitate implementation of sound management controls over program/project formulation and implementation processes to ensure that environmental impacts are appropriately considered. Although NASA has established procedures for implementing NEPA requirements, we found that 11 (85 percent) of 13 mission-related programs/projects reviewed did not comply with NEPA requirements or NASA guidance. In addition, although management considered environmental impact for nine of the construction of facilities projects, two did not fully comply with NASA guidance for implementing NEPA. Up to $3 billion of the program/projects we reviewed did not fully comply with NEPA requirements and were potentially exposed to increased costs, project delays, missed opportunities for preferable alternatives and/or public involvement, and adverse public perception and reaction.

Management controls are essential not only to ensure compliance with environmental laws and regulations, but also to identify and mitigate adverse environmental impacts, risks, and costs to Agency programs and projects. The Agency's lack of compliance with NEPA law and/or NASA guidance can have adverse environmental impacts and may be in potential violation of Federal laws and NASA guidance. Specifically, noncompliance with NEPA can result in the following:

- Unnecessary program and project delays, stoppages, and increased costs. Failure to complete all NEPA procedural requirements is a primary cause for adverse judicial decisions.

- Lost opportunities to consider other reasonable alternatives and their environmental impacts early in the project planning stage. This occurs when NEPA compliance occurs too late or when hard commitments are made that limit alternatives or

[8] Institutional Program Offices are the Office Aerospace Technology, Office of Space Flight, Office of Earth Science, and Office of Space Science.

essentially drive the Agency to choose a particular alternative.

- Limited public involvement. Failure to obtain and consider the views of the public hinders full and fair consideration of the environmental impacts of proposed actions and alternatives in those cases in which a significant environmental impact exists.

We made nine recommendations to improve controls over environmental management in NASA's mission-related activities. Overall, management stated that the audit report exaggerates the nature and scope of NEPA violations for the programs/projects reviewed. However, management agreed that training, guidance, and managerial controls related to NEPA are inadequate to ensure NEPA compliance for existing and future programs/projects. Management concurred or partially concurred with six recommendations. Management nonconcurred with three recommendations to report NEPA compliance as a potential material weakness, require environmental management planning, and bring program/projects into compliance with NEPA. In follow-up discussions with management, the Agency has agreed to address NEPA planning in new guidance under development and to reassess each of the projects/programs that we reported as being NEPA noncompliant. We agreed with management that NEPA compliance did not need to be reported as a material weakness at this time considering the actions management has planned or already taken to strengthen the NEPA process within the Agency.

Nuclear Reactor Decommissioning. Another environmental concern relates to NASA's decommissioning of the Plum Brook Reactor Facility in Sandusky, Ohio. In 1997, we recommended that NASA begin the process of decommissioning the facility, thereby saving millions of dollars in future maintenance and disposal costs. NASA agreed and has made progress on the decommissioning. The Agency committed to the Nuclear Regulatory Commission to submit a decommissioning plan to terminate the license for the Reactor Facility at the end of 1999 and to complete the decommissioning activities by the end of 2007. The decommissioning is a sensitive issue, and the estimated costs (more than $100 million) are significant. NASA management is monitoring the decommissioning and is requesting funds.

Table 1 – Safety and Mission Assurance

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
Audits	Agency Needs to Clarify Goals and Measurement Baselines for Aviation Safety Initiative (IG-00-053)	NASA initiated a major program planning effort involving industry, Government, and academic organizations to define the research the Agency will conduct. An audit showed that NASA has not portrayed its goals and identified all measurement baselines for its Aviation Safety Initiative consistently. Further, NASA has not adequately emphasized the risks involved with developing and implementing various safety technologies and how those risks affect program success. The Agency has also inconsistently integrated its goal and baseline with the FAA.	We recommended that NASA clarify its contribution toward the national aviation safety goal and revise its plans, including those with the FAA, and goals accordingly to ensure various Agency documents and Web sites are consistent with NASA's intended performance. We also recommended that the Agency establish baselines to measure its performance relative to established goals and place more emphasis on informing stakeholders about the development and implementation risks that could adversely affect program success. Management concurred with the recommendations and has initiated responsive corrective actions.
Audits	NASA to Improve Its Application of Basic Safety Provisions to Existing Contracts (IG-00-035)	An OIG audit of contract safety requirements at Kennedy and Marshall found that NASA is taking action to ensure its contractor workforce is supportive of and accountable for safety. Through the Risk Based Acquisition Management Initiative, the Agency is revising the updated NASA FAR Supplement to ensure that risk is the core concern of all new contracting actions, except for the purchase of commercial off-the-shelf items. Although this is a positive step toward improving the safety practices of NASA contractors, the initiative does not apply to existing contracts. In 15 of 25 existing contracts we reviewed, we found that the Agency had not applied basic safety provisions such as required contract safety clauses,	We recommended that management: (1) identify all open contracts that either involve potentially hazardous operations or exceed $1 million in value, and determine whether those contracts have the required safety clauses and contractor safety plans; (2) determine the cost-effectiveness of modifying those contracts determined deficient, assess the risk of not modifying the contracts, and make those modifications deemed cost-effective and necessary; and (3) direct Center safety offices to assist the responsible Center official in performing an appropriate level (based on assessed risk) of contractor surveillance for each current applicable contract. Management concurred with the recommendations and initiated responsive corrective

*No open recommendations

Table 1 – Safety and Mission Assurance

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		contractor safety plans at contract award, and Center safety office involvement in the procurement process. As a result, all NASA contractors, including some involved in hazardous operations, may not be supporting the same safety goals as NASA.	actions.
Audits	Safety Concerns with Kennedy Space Center's Payload Ground Operations (IG-00-028)	Ground workers in both the Space Station Processing Facility (SSPF) and the Operations & Checkout building were using potentially hazardous materials without exercising proper control and safety precautions. Improper use of these materials poses a potential hazard to ground workers and increases the risk of damage to Shuttle payloads and other equipment. As a result, NASA lacks assurance that associated safety risks are adequately identified, documented, reviewed, & mitigated.	We recommended that management (1) implement procedures, including clarifying work instructions and increased surveillance, to ensure the safe use of Plastics, Foams, and Adhesives (PFAs) that do not meet basic standards for flammability resistance and electrostatic discharge. We also recommended that the contracting officer for the payload ground operations contract (PGOC) determine whether there is a basis to withhold contract costs and award fee related to noncompliant PFAs. Management concurred with the recommendations and has taken action to control PFA usage. The corrective actions include: (1) implementing new Space Station Processing Facility work area rules, (2) informing all personnel as to the governing documents controlling PFA usage, (3) rewriting procedures regarding the preparation of material usage agreements, and (4) increased surveillance of contractor personnel. Management continues to work on revising its procurement procedures to address contractor safety controls over the use of PFAs.
Audits	Spare Parts Quality Assurance for the Space	To improve effectiveness, the Space Shuttle Program (SSP) Manager and NASA safety and	*

*No open recommendations

Table 1 – Safety and Mission Assurance

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
	Shuttle (IG-00-011)	mission assurance officials reduced "Government Mandatory Inspection Points" for Shuttle processing and vehicle manufacturing and took significant steps to ensure the safety of Shuttle operations. However, the SSP Manager did not eliminate unnecessary inspection points at spare parts suppliers, and did not consolidated quality assurance requirements. As a result, NASA has redundant Government quality assurance resources at some locations that could be used more efficiently elsewhere. We recommended that NASA management establish policies and procedures to improve the efficiency of quality assurance at the supplier level. Management concurred with the report finding and took sufficient action to disposition the recommendations.	
Audits	Safety Considerations at Goddard Space Flight Center (IG-99-047)	Goddard was making plans to implement the requirements of the Agency Safety Initiative and to achieve certification under the OSHA Voluntary Protection Program. However, Goddard's various safety offices were not combined into one organization with a full-time director; the mishap reporting process did not ensure that the causes of all mishaps were properly addressed and that all mishaps and related information were adequately reported; and contractor safety records were not evaluated prior to contract award, as required by the NASA Safety Manual. We made five	We made five recommendations for improvement. Management continues to work to implement corrective actions, including major cultural change activities to heighten employee awareness and dedication to safety. All recommendations will remain open pending management's completion of its corrective actions.

*No open recommendations

Table 1 – Safety and Mission Assurance

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		recommendations for improvement. Goddard management concurred with each recommendation and has planned or initiated responsive actions. Our work disclosed safety risks at Goddard.	
Audits	Space Station Configuration Management (IG-98-032)	Functional and configuration audit processes for the Space Station program were effective in meeting program needs.	*
Audits	Space Station Spares Availability (M-IG-98-002)	NASA management agreed to continue monitoring spares availability and to take actions needed to provide support for development and utilization of the Space Station.	*
Inspections	Follow-up Assessment on 1997 Inspection of the NASA Aerospace Safety Advisory Panel (ASAP) (G-99-020)	Determined the status of corrective actions taken by NASA management in response to our prior ASAP report recommendations.	*
Inspections	NASA's Badging Program and Physical Access Controls at Marshall Space Flight Center (G-99-001) Wallops Flight Facility (G-99-014) Goddard Space Flight Center (G-00-004)	NASA implements badging programs and physical access controls at each Center to control access to Center facilities. We examined those programs and controls at three Centers, with a focus on determining whether the Centers have adequate policies and procedures in place to control access to mission critical locations and facilities containing sensitive or controlled information or materials. At each Center we found weaknesses in physical security. These reports are sensitive with limited distribution and are not generally releasable to the public.	In the three reports, we made a total of 35 recommendations to improve security controls and operational effectiveness. NASA concurred with all 35 recommendations and actions are underway to correct the weaknesses. The recommendations remain open pending verification of corrective actions.
Inspections	Comments on the Lewis	The Lewis Spacecraft Mishap Investigation Board	*

*No open recommendations

Table 1 – Safety and Mission Assurance

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
	Research Center (Lewis) Spacecraft Mishap Investigation Board Report (Management Memorandum, G-98-020)	report needed improvement. (Lewis is now the Glenn Research Center.) The overall Agency process could be improved by avoiding Board membership for individuals, which gives the appearance of bias or conflict of interest; increasing range of expertise of Board; and expanding scope of interviews.	
Inspections	Modifications to NASA Safety Reporting System (Management Memorandum, G-98-018)	We recommended process changes and technical modifications to upgrade and modernize the NASA Safety Reporting System.	*
Inspections	Assessment of Flight Termination Systems (FTS) (G-98-011) (Security Classified – Confidential)	To reach flight termination decisions, NASA uses various systems commonly referred to as FTS. In addition to other potential improvements, the Agency should use appropriate risk-based assessments to reach decisions on whether to use secure FTS's. This report is classified with limited distribution; it is not generally releasable to the public.	We made recommendations to enhance program security and to address the Agency's top priority—safety. We made recommended that NASA work with Federal agencies to revise national policy regarding the use of FTS, develop communications security guidelines for the application of encryption and authentication, conduct an FTS technology enhancement study, and implement interim operational security procedures until a secure infrastructure is available. These recommendations are considered resolved pending verification of corrective actions.
Inspections	X-33 Program Security Assessment (G-98-009)	Assessment of the security for the X-33 reusable launch vehicle (RLV) prototype revealed areas for improvement.	We recommended that the X-33 program discontinue its plans to use a non-secure flight termination system, and that the X-33 program apply a National Security Agency endorsed and approved communications security solution to protect the command and control uplink. Management did not

*No open recommendations

Table 1 – Safety and Mission Assurance

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
			concur with these recommendations.
Inspections	Shuttle-Mir Rendezvous and Docking Missions and International Space Station Operational Task Forces (G-98-003)	Task Force should expand the breadth of expertise of its membership and include members free of potential conflicts or perceived biases because of overly close association with NASA. Perception of bias may discourage reporting of safety concerns to the Task Forces.	*
Inspections	Timing of Independent Team Meetings and Communications for Shuttle-Mir and International Space Station Missions (G-98-002)	Fact gathering and recommendations to the Administrator on flight-related issues needed to occur earlier in the process to maximize usefulness.	*
Inspections	Letter to Congressman James Sensenbrenner on NASA's Participation in the Russian Mir Space Program (August 29, 1997)	We reported Shuttle-Mir safety challenges including: fire, decompression, and loss of attitude control. Oversight into Mir operations was limited because of NASA's "guest" status rather than partner status. Also, Russia did not provide timely information, and ground support communication was inadequate. Safety impact of stress resulted from conditions aboard the Mir (for example, high levels of potentially toxic substances, high temperatures, demands on time for maintenance activities, and lack of communication).	*

*No open recommendations

Table 2 – International Space Station

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
Audits	X-38/Crew Return Vehicle (CRV) Operational Testing (IG-99-036)	The United States has agreed to provide a crew return vehicle (CRV) for the ISS. NASA's planned human-rating process for the CRV did not include an operational test.	We recommended that management revise the CRV Project Plan to provide for the contingency of CRV operational testing and include CRV operational testing in the Space Station risk management system as a primary risk. Management concurred, but the recommendation remains open pending management's preparation of a test plan. Management estimates completion of this action by May 2005.
Audits	Performance Management of the International Space Station Contract (IG-00-007)	An OIG review, performed at the request of the NASA Administrator, showed that Boeing reported unrealistically low estimates of projected cost overruns and presented the cost data to indicate that no additional cost overrun would occur. Although the Program Office was aware and had evidence of cost overruns and schedule slippages, it did not refute the contractor's estimate. As a result, Boeing received unearned incentive fees totaling $16 million that the Agency later recouped. Also, Boeing did not promptly notify NASA about the potential cost increases due to Boeing's reorganizations. NASA will be charged an estimated $35 million in reorganization costs for the ISS Program through contract completion.	We made 14 recommendations to strengthen Space Station performance management and minimize or eliminate the cost impact to NASA of contractor restructuring activities. Eight of the recommendations were closed with the issuance of the final report. Four additional recommendations were closed September 18, 2000. The remaining two recommendations are being monitored awaiting results of an OIG audit and determination by the Space Station Program Office on what will replace the independent annual reviews.
Audits	Space Station Contingency Planning for International Partners (IG-99-009)	The Space Station Program Office had not developed an integrated and comprehensive plan to address risks to the assembly of the Space Station because of possible delay or default by international partners. In addition, the contingency plan did not contain or clearly identify several	We recommended management establish (1) a Space Station contingency plan that complies with Agency guidance for effective risk management, and (2) a process to ensure the contingency plan is kept current. Management concurred. In September 2000, we again requested that management provide

*No open recommendations

Table 2 – International Space Station

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		critical elements for effective risk management. Specifically, the plan did not contain cost and schedule impacts and did not clearly identify risk mitigation measures and the primary consequences of the contingencies.	evidence to support completion of the agreed-to actions for the recommendations and are awaiting their response.
Audits	Space Station Corrective Action Plans (IG-99-007)	The NASA Space Station contract requires the prime contractor, Boeing, to have an Earned Value Management System (EVMS) which produces an assessment of cost and schedule performance. Boeing prepares a report, which identifies the largest cost and schedule variances, and the corresponding cause, effect, and the corrective action plans that will be taken. However, Boeing's corrective action plans and NASA's oversight of the plans need improvement.	We recommended that management (1) ensure adequate surveillance of Boeing's EVM System, (2) require DCMA to prepare required contract administration reports, and (3) improve the quality of corrective action plans. Management took action including assigning a budget analyst to review and validate the quality of DCMA's monthly variance analysis reports. DCMA also took some positive steps. These recommendations will remain open pending completion of corrective actions. In March 2000, we again requested management provide evidence to support completion of the agreed-to actions for those recommendations. Management is working to provide evidence to support closure of the recommendations.
Inspections	International Space Station Command and Control Communications (G-99-010B)	NASA had not considered all possible upgrade options for the Space Station's primary command and control uplink. This may result in the selection of a more costly, insufficiently secure option.	We recommended that NASA conduct a thorough analysis of the risks associated with the ISS command uplink and of the potential upgrade options. We also recommended that NASA acquire permanent civil service staff in the area of system security engineering and communications security. NASA concurred with the recommendations, but has not yet completed corrective actions.
Inspections	International Space Station Portable Computer System and the Data Display	This review found problems with the ISS on-board Portable Computer System (PCS) and the accuracy of displays developed for the PCS. The PCS is the	We recommended that NASA management work to eliminate erroneous information, make application commands consistent, and reduce cumbersome

*No open recommendations

Table 2 – International Space Station

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
	Process (G-99-010A)	crew's primary interface for command and control of the Station. PCS usability needed to be improved.	system navigation. We also recommended that NASA develop a coordinated, well-defined process for software engineering and software management. Management was not completely responsive to the recommendations, concurring with four recommendations and partially concurring with the remaining seven recommendations.
Inspections	Followup Assessment of Management Alert Issued February 6, 1998, Chartered Flights Between the United States and Russia (G-98-014)	In general, the charter service used by NASA to support the ISS program was not cost-effective compared to commercial air services. We also reported our concerns regarding security, procedures, and adherence to transportation regulations. NASA management concurred with our recommendation to terminate the charter service. The termination will save the Agency approximately $4.0 million in annual costs.	*
Inspections	Review of International Space Station Phase I Lessons Learned Activity (G-98-012)	Although the ISS program was late in initiating the lessons learned process, the transfer of knowledge and experience acquired was being adequately addressed. With partial concurrence on our third recommendation, management fully agreed with the two others to enhance the lessons learned process. NASA agreed to assess other sources of lessons learned, including various historical sources and to apply them to the ISS program.	*
Inspections	Enhancing Compatibility for Long-Duration Space Flight Crews (G-98-005)	To improve safety and mission success of long-duration space flights, NASA needs to identify astronauts best suited for long-duration travel, provide psychological evaluations of astronauts, and improve training. Management partially concurred with our recommendations.	*

*No open recommendations

Table 3 – Information Technology

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
Audits	NASA Can Expand and Improve Use of the Outsourcing Desktop Initiative (IG-00-060)	The desktop seat prices at JPL significantly exceeded those paid by other NASA installations using the Outsourcing Desktop Initiative for NASA (ODIN) contract. Because the JPL outsourcing contract was based on adequate price competition, we did not question the basis of JPL's desktop seat prices. However, if JPL uses the ODIN contract to acquire desktop services after its current contract expires, NASA could put to better use as much as $33 million over a 3-year period. We also found that NASA had not assessed the effectiveness of two approaches used in making desktop seat assignments or issued guidance for determining seat selections at various Agency installations. Accordingly, NASA lacks assurance that it has assigned seats to employees in the most efficient and effective manner.	We recommended that NASA ensure that JPL includes ODIN among competitors when awarding the installation's future desktop outsourcing contract. We also recommended that the ODIN Program Manager assess the effectiveness of the two seat assignment approaches and issue guidance to all installations for use in selecting an appropriate approach. Management concurred with the report recommendations and initiated responsive corrective actions.
Audits	NASA Can Improve Its Planning for Presidential Decision Directive 63 (IG-00-057)	Overall, NASA has made progress toward protecting the Agency's critical infrastructure assets. However, NASA has not identified the actions needed to achieve an initial operating capability by December 31, 2000, as required by PDD-63. Until NASA identifies and implements needed actions, the Agency lacks assurance that it is adequately protecting its critical cyber-based infrastructure assets. Also, the Agency list of minimum essential infrastructure assets contains errors and inconsistencies. As a result, NASA lacks assurance that it can provide appropriate oversight of PDD-63 vulnerability assessment and	We recommended that NASA develop a clear definition of an initial operating capability and provide guidance and attainable milestones for achieving it. We also recommended that NASA issue additional guidance to ensure that installations accurately and consistently identify their minimum essential infrastructure assets and that NASA eliminate errors and inconsistencies in its list of those assets. NASA either concurred or partially concurred with the findings and recommendations and initiated appropriate actions.

*No open recommendations

Table 3 – Information Technology

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		risk mitigation activities.	
Audits	NASA's System Information Technology Security Planning Can Be Improved (IG-00-055)	NASA has not adequately complied with the Computer Security Act of 1987 and OMB Circular A-130, "Management of Federal Information Resources." NASA Headquarters and the Centers had no IT security plans for 17 of the 38 SMA systems and for 13 of the 30 Web site host computers in our samples. JPL has no IT security plans for its IT systems. None of the IT security plans in either sample fully complied with OMB Circular A-130. In addition, there were no security plans, contingency plans, or risk assessments for five major elements of a major information system. The lack of adequate IT security plans significantly reduces the effectiveness of the IT security programs for those systems. The audit also found that initial and periodic personnel screening requirements in NASA Procedures and Guidelines (NPG) 2810.1, "Security of Information Technology," do not comply with OMB Circular A-130 requirements. Inadequate personnel screening may degrade the security of NASA's IT systems.	We recommended that NASA management establish a process to manage the development and implementation of IT system security plans and revise Agency IT security policy on personnel screening requirements. We consider the noncompliance with the Computer Security Act and OMB Circular A-130 to be a potential material management control weakness reportable in accordance with OMB Circular A-123, "Management Accountability and Control," and NASA policy. Management concurred with 7 of the report's 10 recommendations. Actions completed for three recommendations were sufficient to close those recommendations for reporting purposes. Management partially concurred with recommendations to report the Federal noncompliance conditions at JPL, Langley, and NASA Headquarters to the Agency's Internal Control Council as significant areas of concern.
Audits	Implementation of Security Software at Johnson Space Center (IG-00-031)	An audit of Johnson's implementation of external security software used to protect a mission-related system identified several weaknesses in the areas of access privileges and management oversight.	While the security software configuration was implemented to protect system files and general resources, improvements needed included the following areas: (1) assigning privileged capabilities only to those individuals with a justified need for

*No open recommendations

Table 3 – Information Technology

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
			them; (2) enforcement of established naming conventions for system data sets; (3) establishing follow-up procedures for potential unauthorized system access; and (4) establishing review process for security logs, privileged access to tape controls, and access lists for critical files and directing the contractor perform internal security software audit. Management concurred with the recommendations and proposed responsive actions. We requested that management accelerate some corrective actions.
Audits	UNIX Operating System Security at Goddard Space Flight Center (IG-00-024)	An audit of two host computers that use a UNIX variant called Solaris that was developed by Sun Microsystems, Incorporated found that the systems reviewed did not have adequate IT security programs. The deficiencies identified included inadequacies in the access authorization process, password security controls, controls over the use of the superuser account, and system backup policies were.	We recommended that Goddard management improve personnel screening, the process for granting access to computer systems, password security, and protection of critical system files; establish policies for privileged operations and system backups; and implement proactive security monitoring. While Goddard management concurred with the importance of implementing proper controls, it did not provide information on corrective actions planned, ongoing, and completed, or the estimated completion date for corrective actions. We requested that management provide additional information.
Audits	General Controls at Johnson Space Center's Mission Control Center (MCC) (IG-00-017)	Johnson's MCC can improve its disaster recovery planning and capability in the areas of documentation, risk assessment, extended backup strategy, testing, server backup and off-site storage, and training. Given MCC's critical importance to the Shuttle and Space Station Programs, system recovery delays related to these elements could affect MCC's support of those	We made 14 recommendations to improve controls. Management concurred with nine recommendations and partially concurred or non-concurred with others. We asked management to reconsider their position on certain recommendations and to provide additional comments in response to the final report. Management provided a copy of the revised disaster recovery plan, which is being reviewed by the OIG.

*No open recommendations

Table 3 – Information Technology

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		programs. In addition, management should improve MCC physical access and environmental conditions.	We are working with management to resolve the issues.
Audits	UNIX Operating System Security and Integrity at Kennedy Space Center (IG-00-014)	In December 1996, NASA approved and provided funding for a major system upgrade project. The operating system supporting the environment in which programmers develop software for the project is UNIX-based. An OIG audit of UNIX in the system development environment identified weaknesses in the area of security controls. Without adequate UNIX security controls, the system development environment could be compromised by an unauthorized source without detection. We found that management needs to review the weaknesses identified and improve controls in certain areas.	We made twelve recommendations to improve controls. Management either concurred or partially concurred with our recommendations. We consider four of the twelve recommendations closed for reporting purposes. The remaining eight will remain open until agreed-to-corrective actions are completed and we have assessed their adequacy.
Audits	Year 2000 (Y-2K) Program Oversight of NASA Grants and Cooperative Agreements (IG-99-048)	NASA requires its grant recipients and cooperative agreement partners to report significant Y2K-related problems. However, NASA has not established timeframes for such reporting. Also, the Agency does not require recipients to report on whether recipient computer systems are Y2K compliant. Management agreed to require major recipients to report whether recipient computer systems are Y2K compliant, identify significant Y2K-related problems, and require appropriate remedial actions.	*
Audits	Year 2000 Implementation Phase (IG-99-044)	The OMB adopted the GAO contingency planning guide entitled *Year 2000 Computing Crisis: Business Continuity and Contingency Planning* (BCCP), which identifies the key elements that a	*

*No open recommendations

Table 3 – Information Technology

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		BCCP plan and a contingency test plan should contain. NASA installations had incorporated only some of the key elements prescribed by the GAO planning guide which reduces NASA's assurance that it can effectively respond to Y2K-related failures. Management agreed to correct the deficiencies.	
Audits	Disaster Recovery Planning at Marshall Space Flight Center's Automated Data Processing Consolidation Center (IG-99-043)	The NASA Automated Data Processing Consolidation Center (NACC), at Marshall is primarily responsible for computer operations, systems reliability, systems software, configuration management, and strategic planning for NASA-wide administrative systems and for several program support systems. An audit showed that while the NACC has implemented a disaster recovery plan that includes most of the necessary provisions for emergency response, extended backup operations, and testing; improvements are needed in the areas of disaster recovery strategy, procedures, and training.	We made eight recommendations to improve disaster recovery strategies, procedures, and training. We also recommended development of a user contingency plan. Management is implementing corrective action for these recommendations, and we will continue to monitor the issues.
Audits	Ames Research Center's NAS Facilities Disaster Recovery Plan (IG-99-032)	The Numerical Aerospace Simulation (NAS) Facility does not have a management-approved disaster recovery plan that meets applicable Federal and NASA requirements for emergency response procedures, extended backup operations, and testing.	NASA management agreed to implement and maintain a NAS disaster recovery plan that complies with Agency and Federal regulations.
Audits	Audit of Year 2000 Program Compliance Requirements in NASA Information Technology-Related Contracts (IG-99-	NASA guidance required contracting officers to include a clause in IT solicitations and new contracts addressing Y2K and to modify the statement of work in existing IT operation and maintenance contracts. However, JPL had not	*

*No open recommendations

Table 3 – Information Technology

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
	022)	included the NASA-directed requirements in all its existing IT operations and maintenance contracts. Untimely incorporation of the Y2K compliance requirements increases the potential for noncompliant Agency systems on January 1, 2000. Management established a June 30, 1999, target date for JPL to incorporate the Y2K requirements into contracts and agreed to monitored progress. Corrective action is complete and the recommendation is closed.	
Audits	Audit of Disaster Recovery Planning at Kennedy Space Center (IG-99-017)	Two critical systems Kennedy, the Launch Processing System (LPS) and the Shuttle Processing Data Management System (SPDMS), have appropriate procedures for emergency response and for recovering data and software. However, neither has an extended backup capability to recover from a local disaster, which could cause significant schedule and mission delays for the Shuttle Program. We found that Kennedy management needs to: (1) survey other NASA entities, Government agencies, and commercial enterprises to determine the availability of cost-effective extended backup capabilities for the LPS and SPDMS; (2) develop and implement disaster recovery plans for the LPS and SPDMS that provide for extended backup capability; and (3) ensure that operations can be restored within the maximum acceptable downtime for critical LPS and SPDMS applications.	NASA management did not concur with the report's three recommendations. Our recommendations will remain open pending Kennedy management's completion of the most current risk assessment and related corrective actions.
Audits	NAS Data Center General Controls at Ames Research	NASA had not established an adequate control structure to provide for a reliable computing	*

*No open recommendations

Table 3 – Information Technology

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
	Center Numerical Aero-Space Simulation Facility (IG-99-010)	environment at the Numerical Aerospace Simulation Facility. Major control weaknesses were identified in the areas of (1) physical and logical access, (2) computer security, (3) file retention, backup, and recovery management; (4) software change management, (5) system accounting and file auditing, and (6) risk assessments. Management generally concurred with our recommendations and completed responsive corrective actions.	
Audits	Disaster Recovery Planning at the Jet Propulsion Laboratory (IG-99-006)	JPL provides telecommunications and mission operations support to space exploration missions and other activities. JPL management needs to take several actions to improve its disaster recovery plan including: (1) identifying the applications that support mission-critical functions and the relative criticality of each application, (2) documenting transportation and support arrangements, (3) updating the list of key individuals responsible for contingency operations, and (4) updating the application software listing to show the version and release date and applied vendor fixes. JPL also needs to develop policies and procedures for the restoration of normal operations and include them in the disaster recovery plan.	The report included six recommendations to strengthen the disaster recovery plan. Center management agreed to implement actions responsive to the recommendations. While it appears that the actions taken or in process should satisfy our recommendations, the recommendations will remain open pending our receipt and review of appropriate documentation for these actions.
Audits	Disaster Recovery Planning at Johnson Space Center (IG-99-005)	While a disaster recovery plan is in place, the Shuttle Software Production Facility (SSPF) does not have a strategy or procedures in place for extended backup operations in the event of a disaster, the plan is not tested annually, and SSPF	*

*No open recommendations

Table 3 – Information Technology

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		application users have not developed contingency plans. Management concurred with four of the six recommendations and initiated corrective actions. Management decided to accept the risks associated with (1) vendors not supplying backup resources in a timely manner, and (2) not establishing contingency plans for the Flight Equipment Interface Devices.	
Audits	Year 2000 Program Oversight of NASA's Production Contractors (IG-99-004)	NASA's Y2K Program lacks reasonable assurance that its production contractors will provide Y2K-compliant data to support key financial and program management activities. As a result, NASA risks using noncompliant data that may adversely affect the Agency's control, budgeting, program management, and cost accounting activities. Management generally concurred with the intent of the recommendations and initiated a plan to assess the Y2K status of NASA's major contractors.	*
Audits	Data Center Controls at Lewis Research Center (IG-98-039)	The physical access control system used to protect Lewis' Research Analysis Center had not been certified as meeting security requirements. Physical access procedures to the facility were not adequate. Lewis has addressed these issues.	*
Audits	Disaster Recovery Planning at Goddard Space Flight Center (IG-98-036)	The Solar Heliospheric Observatory Mission Operations Center did not have computer contingency capabilities in place in the event of a disaster. Additionally, contingency plans for a data center associated with the Tropical Rainfall Measurement Mission were incomplete. Finally, computer risk assessments did not analyze the	*

*No open recommendations

Table 3 – Information Technology

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		potential effects of losses caused by disasters. Goddard agreed to implement corrective actions.	
Audits	Information Technology (IT) Capital Planning and Investment Control (IG-98-034)	The NASA IT investment process does not satisfy Clinger-Cohen Act and OMB Circular A-130, *Management of Federal Information Resources*, requirements for post implementation reviews of major, new IT investments. NASA initiated process improvements that satisfied the IT post implementation review requirements.	*
Audits	Improving Controls Needed Over NASA's Super-Computing Inventory (IG-98-021)	NASA's Consolidated Supercomputing Management Office (CoSMO) did not have an accurate inventory of NASA's supercomputers and supercomputing time purchased.	NASA initiated responsive corrective actions.
Audits	Consolidation Decision for Secure Supercomputers (IG-98-020)	Cost-benefit analysis prepared by CoSMO did not adequately support its decision to relocate secure supercomputing from Langley to the Naval Oceanographic Office at the Stennis Space Center. We recommended that the CoSMO Director use only current, accurate, complete, and adequately documented data in its consolidation decisions. NASA concurred with the recommendation and took corrective action.	*
Audits	Data Center General Controls at Kennedy Space Center (IG-98-018)	Procedures for monitoring unauthorized access attempts to the Shuttle Processing Data Management System were inadequate. Kennedy took corrective action.	*
Audits	Data Center General Controls at Jet Propulsion Laboratory (IG-98-009)	Computer security implementation plans and reviews had not been developed or conducted for JPL's Institutional Business Systems (IBS) as required by JPL policy. Additionally, physical access controls to the IBS data center were in need	*

*No open recommendations

Table 3 – Information Technology

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		of improvement. JPL corrected these deficiencies.	
Audits	Data Center General Controls at Goddard Space Flight Center (IG-98-006)	Physical access controls associated with the Hubble Telescope Data Operations Center and the Hubble Telescope Servicing and Maintenance System Facility were inadequate. Additionally, computer risk management plans had not been conducted as required. Goddard corrected these deficiencies.	*
Audits	Data Center General Controls at Johnson Space Center (IG-98-005)	We found that physical access controls to the Shuttle Software Production Facility needed improvement. Additionally, the facility did not have an uninterruptible power supply (UPS) as a defense against power problems. Johnson corrected the physical access problem and agreed to conduct a feasibility study and cost/benefit analysis on the UPS.	*
Audits	Application of OMB Circular A-76 to Desktop Outsourcing (IG-98-001)	NASA had not fully satisfied the cost comparison requirements of OMB Circular A-76, "Performance of Commercial Activities," relative to the Agency's desktop computer outsourcing initiative. NASA took actions that satisfied the prerequisites for exemption from A-76 cost comparison requirements.	*
Inspections	Access to Shared Files (Management Alert, G-00-011)	Alerted the Agency to ensure that sensitive, privacy act, or administratively controlled information is not placed on areas of local area networks accessible by all employees.	*
Inspections	Network Operations Centers (Management Alert, G-00-010 – Sensitive)	Alerted the Agency to staff Network Operations Centers 24 hours a day, seven days a week (24x7) or make other arrangements for active 24x7 monitoring of network activities. Agency plans to	*

*No open recommendations

Table 3 – Information Technology

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		address this issue still open. This document is sensitive with limited distribution; it is not generally releasable to the public.	
Inspections	Headquarters Hard Drive Laptop Loaner Pool (G-00-008)	Evaluated processes used to erase user data from hard drives loaned to Headquarters employees. Determined that processes should be improved to protect employee and sensitive data. This report is sensitive with limited distribution; it is not generally releasable to the public.	Three recommendations were made to management: (1) issue a technical modification to the contract for the contractor to implement effective clearing methods; (2) alert users of laptop loaners about the security vulnerabilities attendant to their use, and (3) ensure that only licensed copies of vendor software are used when clearing laptop computer hard drives. Management concurred with the recommendations. The recommendations are considered resolved pending verification of the corrective actions.
Inspections	Clearing of Data from Classified Computer Hard Drives (G-99-009 - Sensitive)	NASA management did not have an established process in place for handling classified computer hard drives in a transfer or excess status. Accordingly, we cited fundamental security concerns. This report is sensitive with limited distribution; and is not generally available to the public.	We recommended NASA take immediate action to develop procedures and guidance for clearing classified information from affected hard drives. Management fully concurred with the recommendation and published its new procedures in March 2000. This recommendation is considered resolved pending further verification of the adequacy of the corrective action.
Inspections	Assessment of the National Aeronautics and Space Administration's Automated Systems Incident Response Capability (NASIRC) (G-99-007 – Sensitive, Limited Distribution)	NASIRC is used by NASA to identify and respond to incidents and attacks involving NASA's automated information and telecommunications systems. Our report addressed the adequacy of the Agency's incident reporting, response, handling, coordination, and information-sharing capabilities. This report is sensitive with limited distribution; it is not generally releasable to the public.	We recommended that NASA should evaluate expanding the NASIRC's responsibilities to include collecting, analyzing, and reporting all IT security incidents including security incidents and vulnerabilities that threaten national security systems. NASA should also establish an Agency-level security incident response capability, in compliance with national policy. These recommendations are considered resolved pending the completion and verification of corrective actions.
Inspections	NASA's Implementation of	With the increasing number of computer	We made seven recommendations to NASA

*No open recommendations

Table 3 – Information Technology

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
	a Public Key Infrastructure (PKI)(G-99-006)	intrusions, NASA requires security, authentication, and access controls over electronic communications (e.g., electronic mail, data interchange, Internet data and use, and financial software). The use of a PKI is one important way to achieve strong security by using cryptography. NASA responded to security needs by selecting products from one vendor to meet key requirements.	management: (1) validate NASA encryption, authentication and digital signature requirements for general users; (2) require that market research be documented; (3) fully utilize the competitive procedures established within existing contracts to obtain the best value for the Agency; (4) precisely determine NASA quantitative need for certificates; (5) require risk and threat analyses of each system potentially requiring security above the general user level; (6) identify total costs associated with implementing and maintaining a PKI to meet security requirements above the general user level; and 7) establish policies and procedures for PKI in the from of a NASA Procedures and Guidelines document. These recommendations remain open pending verification of the adequacy of corrective actions.
Inspections	Data Remaining on Transferred and Excessed Personal Computers (Management Alert, G-99-003A – Sensitive)	Alerted the Agency to check for and properly remove data (particularly sensitive, privacy act, or administratively controlled data) remaining on computer hard drives that are to be transferred or excessed. This report is sensitive with limited distribution; it is not generally available to the public.	*
Inspections	Inspection of Kennedy Space Center Computer Hard Drives (G-99-003)	This inspection determined that more than 80 percent of the personal computers in the Kennedy property disposal process had recoverable information on their hard drives. If released outside the Agency, this information could expose NASA to Privacy Act violations. In addition, 76 percent of the drives tested were found to be loaded with licensed software. Management	Three recommendations were made to management: (1) alert installation officials to the problems and risks associated with the inadequate removal of data and licensed software from hard drive devices; (2) take immediate action to wipe clean computer hard drives in the property disposal or excess process; and (3) determine whether environmental and security conditions of the property disposal warehouse are

*No open recommendations

Table 3 – Information Technology

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		concurred with all our report recommendations and pledged swift corrective action. This report is sensitive with limited distribution; it is not generally available to the public. As a result of this and other similar activities, the NASA OIG issued a brochure, *Clearing Information From Your Computer's Hard Drive*, to heighten awareness about this particular computer security vulnerability.	adequate. These recommendations are considered resolved pending verification of corrective actions.
Inspections	Dryden Flight Research Center Network Intrusion - Lessons Learned (G-99-002)	We highlighted prudent steps that Dryden took overcoming an unauthorized network intrusion. We shared this report with NASA computer and security officials to share lessons learned from the Dryden experience. This report is sensitive with limited distribution; it is not generally available to the public.	*
Inspections	Lewis Security Management Inspection (G-98-007)	NASA management concurred with the recommendations we made to improve physical and information security weaknesses at Lewis. This report is sensitive with limited distribution; it is not generally available to the public.	*

*No open recommendations

Table 4 – Procurement

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
Audits	Property Administration Delegations Should Be Resolved (IG-00-054)	The OIG performed an audit to determine whether NASA and its delegated agencies appropriately manage Government property held by contractors. We determined that NASA is not assured that over $ 1.9 billion in contractor-held property is managed appropriately. NASA can either delegate property oversight to Department of Defense agencies or it can retain the oversight function. Property administration delegations were not completed for the property in question. As a result, NASA is not assured that Government property held by contractors is appropriately managed.	We recommended that NASA resolve the issues of oversight of Government-owned/contractor-held property by either delegating or retaining the property administration function. We also recommended that NASA strengthen its delegation controls to ensure that property administration functions are completed for future contracts involving contractor-held property. Management concurred with our four recommendations and their proposed actions were considered responsive. The property oversight issues will remain open pending formal delegation or retention of the property administration functions.
Audits	NASA's Use of SmartPay Purchase Cards (IG-00-050)	Overall, the NASA SmartPay Purchase Card program was effective. Management had implemented appropriate controls over the majority (more than 95 percent) of sampled purchases, and the purchases were efficient and cost-effective. Center managers must remain vigilant over purchases, however, because we found 8 of 234 sampled purchases were for personal items that did not meet the intent of the FAR and other Federal guidance. With such purchases, the proper use of appropriated funds is not assured.	*
Audits	Health Care Costs at NASA Contractors (IG-00-049)	NASA's process for controlling health care costs is through reliance on contractor insurance/ pension reviews (CIPR's) performed by the DCMA with DCAA support. Our evaluation of CIPR reports for 6 of NASA's top 20 contracts showed that 4 of the	*

*No open recommendations

Table 4 – Procurement

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		6 reports were incomplete and that 3 of the 6 reports were untimely. NASA contracting officers must increase their oversight of the CIPR process to ensure sufficient reviews of insurance and pension plans and costs, including health care costs. The costs can equal more than half the direct labor costs charged to Government contracts. Improved oversight should lead to more current, accurate, and complete CIPR's and to negotiations of fair and reasonable contract prices.	
Audits	NASA Settlement of DCAA's Incurred Cost Audits at Goddard Space flight Center (IG-00-046)	The contract audit follow-up system at Goddard did not include complete records of action taken on findings and recommendations for 14 of 16 sampled DCAA reports for which the resolution and disposition authority had been delegated to the Department of Defense. In addition, Goddard did not meet FAR guidelines on closing out 10 physically completed contracts. As a result, Goddard procurement personnel could not ensure that findings and recommendations were resolved in a timely manner and that the resolutions were in NASA's best interest. Also, delays in contract closeout could result in excess unliquidated obligations that could be used for other NASA programs. Such delays could also directly affect the success of Government negotiations and result in increased workload for contractors and contracting officers.	*
Audits	Cost Benefit Analysis and Award Fee Structure Improvements Needed on	NASA consolidated most existing space operations contracts under one contract valued at more than $3.4 billion over 10 years. Additional services may	We recommended that: NASA establish performance criteria for the lookback award fee pool; after criteria are established and meaningful evaluations can be

*No open recommendations

Table 4 – Procurement

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
	Consolidated Space Operations Contract (IG-00-043)	be transitioned to the contract through exercising one or more of the remaining contract options. An audit disclosed that NASA did not perform cost benefit-analyses prior to consolidations to ensure that the Consolidated Space Operations Contract (CSOC) is the best approach for fulfilling space operations requirements and that $1.2 billion of savings would be achieved. The audit also showed that improvements are needed in the "lookback" provision of the CSOC Award Fee Plan. In addition to 6-month evaluations, the award fee plan includes a lookback provision to evaluate the contractor's performance on the integrated operations architecture.	performed, reallocate $14 million of award fee that could be inappropriately awarded; establish lookback award fee periods that do not exceed 12 months; and revise the CSOC Award Fee Plan to increase emphasis on cost control that would ensure an additional $1.6 million of fee would be placed on cost control. Finally, we recommended that NASA require progress report on the architecture baseline. NASA concurred in principle with our recommendations to perform a cost benefit analysis prior to exercising any contract options, and to evaluate at least annually whether projected benefits have been realized. NASA concurred and initiated corrective actions to address progress reporting on the architecture baseline. NASA nonconcurred on the four recommendations to improve the award fee structure. We reaffirmed our position and requested additional comments in the final report.
Audits	NASA Contract Audit Follow-up System at Johnson Space Center (IG-00-032)	The contract audit follow-up system at Johnson did not include complete records of actions taken on findings and recommendations for all 16 sampled DCAA audit reports for which the resolution and disposition authority had been delegated to the Department of Defense (DoD). We separately determined that the DoD administrative contracting officers had resolved the findings for 11 of the 16 reports, recovered $1.1 million of questioned costs that were allocated to NASA contracts, and negotiated indirect rates that affected the NASA contracts. Further, when NASA	*

*No open recommendations

Table 4 – Procurement

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		retained resolution and disposition authority for audit findings, Johnson contracting officers did not track and report four of five reportable contract audit reports that identified questioned costs of $2.4 million. As a result, the benefits of contract audit findings and recommendations were delayed and potentially not maximized.	
Audits	Procurement Module Testing of NASA's Integrated Financial Management Program (IG-00-016)	Prior to cessation of activities associated with the Integrated Financial Management Program (IFMP), we audited procurement module testing. The test team developed adequate test scripts using transactions with valid data, however, did not include adequate testing of controls over transactions with erroneous data. Without adequate testing of controls over processing of erroneous data, NASA has less assurance that the procurement module will adequately identify, reject, and report erroneous data that could corrupt the database. We recommended that management ensure internal control testing includes tests of erroneous data. Management concurred with the recommendation and took corrective action.	*
Audits	NASA Contract Audit Follow-up System at Marshall Space flight Center (IG-00-010)	The contract audit follow-up system at Marshall did not include complete records of action taken on findings and recommendations for 16 of 19 sampled DCAA audit reports for which the resolution and disposition authority had been delegated to the Department of Defense (DoD). As a result, Marshall could not ensure that audit findings and recommendations were resolved in a timely manner, the resolutions equitably protected	We recommended that NASA management take actions to reemphasize Agency and Federal requirements to ensure that NASA procurement officers maintain a dialogue with DoD administrative contracting officers who have been delegated activities on NASA contracts and resolve contract audit report recommendations within 6 months of issuance of the report. Management concurred with the recommendations and is taking corrective action.

*No open recommendations

Table 4 – Procurement

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		NASA's interests, and the funds related to unresolved audit findings could be reallocated to benefit other NASA programs.	
Audits	Electronic Commerce NASA's Acquisition of Office Supplies (IG-00-008)	Some NASA installations are not using the most cost-efficient method to acquire office supplies. Total NASA expenditures for office supplies exceed $17 million annually. While some installations are using the General Services Administration's electronic commerce application to obtain office supplies, others have negotiated their own contracts with vendors to obtain those supplies. In addition, several installations are using purchase cards to acquire supplies. Further, at least two installations have been operating supply stores for the convenience of their employees. As a result, installations are incurring unnecessary costs for the acquisition of office supplies and for the administration and maintenance of separate office supply catalogs and other support services.	We made two recommendations to ensure that installations use the most cost-efficient method to obtain office supplies. Management concurred with the recommendations and initiated steps to effect the corrective actions.
Audits	Raytheon Subcontract Management (IG-00-002)	Raytheon provides development, maintenance, operations, and sustaining engineering for the Space Station Training Facilities and the Part Task Trainer under a cost plus award fee contract. The contract requires Raytheon to subcontract on a competitive basis to the maximum practical extent. Because Raytheon purchasing policy did not require its personnel to keep supporting documentation to justify noncompetitive procurements, Raytheon officials did not always maintain adequate documentation to support	*

*No open recommendations

Table 4 – Procurement

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		noncompetitive awards. Additionally, Government oversight reviews of the contractor's procurement system did not include examinations of supporting documentation for noncompetitive procurements; therefore, NASA had reduced assurance that the contractor maximized the competition of its subcontracts. We recommended that NASA management direct Raytheon to maintain adequate documentation to support justifications for noncompetitive procurements. We also recommended that management ask the NASA Contracting Officer and the DCMA to include reviews for supporting documentation in their next purchasing system reviews. Management concurred with the recommendations and completed corrective actions.	
Audits	NASA Noncompetitive Procurements (IG-99-056)	Technical analysts did not always adequately support their conclusions about price reasonableness of noncompetitive procurements and contracting officers (CO's) did not always support the reasonableness of prices paid for noncompetitive purchase orders. NASA agreed to have the CO's (1) work closely with the technical analysts to ensure that the technical analyses are supportable and well documented and (2) provide refresher training on the required price support for purchase order awards.	*
Audits	Allied-Signal Subcontract Management (IG-99-042)	Allied-Signal did not maintain supporting documentation for three out of the four justifications for noncompetitive procurements that we reviewed. As a result, NASA has reduced	*

*No open recommendations

Table 4 – Procurement

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		assurance that the contractor maximized the competition of its subcontracts. NASA agreed to direct Allied-Signal to maintain improved documentation of justifications for noncompetitive procurements and to request that the DCMC review supporting documentation in its next purchasing system reviews.	
Audits	Contractor Leased Facilities at Marshall Space Flight Center (IG-99-053) * Contractor-Acquired Facilities at Johnson Space Center (IG-99-008) *	NASA's management of facility leasing can be improved. A significant number of contractor facilities were not effectively used, and some contractor leases were not correctly classified as capital leases.	Management has requested that DCAA review specific leases.
Audits	Commercial Use of the Santa Susana Field Laboratory (SSFL) (IG-98-038)	An audit showed that, contrary to the FAR, Marshall authorized a contractor to use NASA-owned production property at the Santa Susana facility on a rent-free basis in support of a commercial launch vehicle effort. We recommended that Marshall charge rent to a contractor for both its past and future commercial use of the NASA-owned production property at the Santa Susana facility. Marshall had authorized rent-free usage based upon the Commercial Space Launch Act.	Management initially concurred with the report's four recommendations. However, the contractor continued to use the NASA-owned property rent-free and presented data to NASA, DCMA, DCAA, and the OIG in a July 2000 presentation. The data supported their position that the Government had received adequate consideration to support rent-free use of the NASA-owned facilities for the contractor's commercial business. On September 28, 2000, the NASA contracting officer formally provided the Agency's request to close the recommendation based on the contractor response. We are reviewing this latest information, as well as NASA's request, before deciding how to disposition this matter.
Audits	NASA General-Purpose Vehicles Acquisition and Use (IG-98-035)	Four NASA Centers reviewed had excessive vehicles. Two Centers also continued to purchase vehicles, rather than lease vehicles through the	*

*No open recommendations

Table 4 – Procurement

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		General Services Administration (GSA). NASA completed action to eliminate underutilized vehicles and convert to leasing when beneficial to NASA.	
Audits	Single-Source Suppliers for Critical Items (IG-98-030)	NASA has not adequately developed analyses of critical, single-source suppliers of industrial materials.	We recommended and management concurred that the (1) Shuttle Program Manager revise analyses and reporting requirements for critical, single-source suppliers; (2) Shuttle Program Manager include the revised requirements in appropriate contracts; and (3) Headquarters Chief Engineer revise NPG 7120.5A to include a requirement for performing rigorous analyses of and reporting on all critical single-source suppliers, making no distinction between logistics and production suppliers. This last recommendation remains open pending publication of the revised NPG, which is expected by January 2001.
Audits	Costs Not Recovered for Commercial Payloads Flown on the SPACEHAB Module (IG-98-028)	Our audit of the SPACEHAB contract found that because NASA has no clear guidance on how to determine consideration for transportation costs allocable for non-NASA shared payload capacity on Shuttle missions, the Agency has no assurance that sufficient consideration was received.	We recommended that management develop guidance for calculating transportation fees for non-NASA payloads flown on the Shuttle's SPACEHAB module. Management concurred with the rec-ommendation. We continue to monitor management's activities toward final disposition of the recommendation.
Audits	Jet Propulsion Laboratory Contract Issues: NASA Costs Paid to Rehired Former JPL Employees (IG-98-027) *	A series of reviews found that NASA's federally-funded research and development contractor had adequate documented policies and procedures, but failed to follow them, resulting in increased costs to NASA. Such incidences have occurred in payments for travel, early retirement, billings, rehired former employees, and employee charges	*

*No open recommendations

Table 4 – Procurement

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		for materials purchased for the Laboratory.	
Audits	Risks Associated with Ames Research Center Acquisition of Military Family Housing (IG-98-022)	A cost/benefit study to support NASA's acquisition of housing units did not fully identify and consider all costs associated with the housing. In addition, all legal and environmental issues had not been resolved. NASA completed actions to address the above issues and located a Department of Defense military organization to retain responsibility for the housing.	*
Audits	NASA's International Merchant Purchase Card Program (IG-98-011)	NASA's credit card program was generally effective; however, improvements in property accountability, split purchases, cards used by someone other than the cardholder, and purchase and payment controls were necessary. Management took corrective action.	*
Audits	Tracking and Data Relay Satellite System (TDRSS) Single Access System Reimbursable Rate (IG-98-008)	NASA is understating the TDRSS single access service reimbursable rate for services provided to other U.S. Government customers. NASA reexamined both rates and policies.	*
Audits	NASA Single Process Initiative Block Change Process Implementation (P&A-98-002)	NASA needed address inconsistent Center implementation, minimal cost savings, and inadequate resources for staffing and implementing the initiative. NASA improved the benefits realized by the single process initiative.	*
Inspections	Progress Payments under Fixed-Price Construction Contracts (G-00-014)	Conducted a review of procedures used to authorize and document progress payments under fixed-price construction contracts. We found that in some instances Federal and NASA procurement regulations were not adhered to. The Office of Procurement concurred with both	*

*No open recommendations

Table 4 – Procurement

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		recommendations for improvements.	
Inspections	Contractor Use of General Services Administration Vehicles at the Goldstone Deep Space Communications Complex (G-98-013)	Based on alleged misuse of Government vehicles at the facility, we inspected the use of GSA vehicles by contractors at the Goldstone Complex. NASA contractor employees used GSA vehicles for work-to-home commuting purposes. Such practice was contrary to NASA policy and Federal regulations, but in accordance with collective bargaining agreements. NASA management concurred with our two recommendations to discontinue current practices until contractors submitted appropriate justifications to obtain required Administrator authorizations and to review similar practices of other contractors to ensure the appropriate use of GSA vehicles. A follow-up review is planned regarding implementation of planned corrective actions.	*
Inspections	Assessment of Property Disposal Outsourcing (G-98-008)	The excess property outsourcing pilot program at Marshall did not comply with Federal Property Management Regulations. NASA initiated actions to improve the program.	*
Inspections	Shuttle-Mir Rendezvous and Docking Missions and International Station Readiness Task Forces (G-98-003)	The effectiveness of external task forces related to the Mir and the ISS could be improved. We recommended restructuring the process used by the task forces to obtain contract support.	*

*No open recommendations

Table 5 – Fiscal Management

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
Audits	Insufficient Supporting Documentation for Deobligations (IG-00-061)	Financial management officials at Langley and Marshall processed deobligations in a timely manner; however, of the 60 statistically sampled deobligations, 33 (55 percent) were not adequately documented to support the transactions. We also found that 8 (44 percent) of the 18 judgmentally selected deobligations reviewed were not adequately documented to support the transactions. Financial management officials were not adequately documenting transactions because neither the NASA Financial Management Manual nor the Center-specific financial procedures provide adequate guidance for processing and documenting deobligations. As a result, we could not attest to the validity of 17 (28 percent) of the 60 deobligations, valued at about $3.4 million. In addition, we could not attest to the validity of 2 (22 percent) of the 9 deobligations judgmentally selected at Marshall and valued at $4 million.	We recommended that criteria for processing and documenting deobligations be added to the Financial Management Manual and Center financial management procedures. We also recommended that the Centers review the unsupported transactions identified in this report to ensure that they are valid and adequately documented. Management concurred with the recommendations on establishing criteria and their proposed actions were considered responsive.
Audits	Transfer of External Tank Display to Kennedy Space Center Visitor Complex (IG-00-044)	In February 1997, the Center Directors of Kennedy and Stennis Space Center (Stennis) entered into a bilateral agreement whereby Stennis agreed to transfer a full-scale replica Space Shuttle external tank mock-up display from the Stennis Visitor Center to the Kennedy Visitor Complex for use as a major exhibit. In return for the external tank, Kennedy directed its Visitor Complex Concessionaire, Delaware North Parks Services of Spaceport, Inc. (Delaware North), to pay $500,000 in nonappropriated funds to the Stennis Exchange.	We recommended that management: (1) reimburse the Stennis Exchange from appropriated funds, an amount equal to all nonappropriated funds obligated by the Stennis Exchange that were used to augment NASA's appropriation; (2) refund the $500,000 payment received for the external tank transfer and the accumulated interest to Delaware North; and (3) direct Delaware North to redeposit the $500,000 and the accumulated interest received from the Stennis Exchange. Management nonconcurred with the report's findings, conclusions, and

*No open recommendations

Table 5 – Fiscal Management

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		An OIG audit of the transaction found that senior management officials at Kennedy and Stennis did not follow established policies for transferring property between NASA Centers without reimbursement of property cost. Consequently, Delaware North made an unauthorized payment of $500,000 in nonappropriated funds to the Stennis Exchange. The Stennis Public Affairs Office used the $500,000 to fund a construction project and additional public exhibits at the Stennis Visitor Center, which resulted in an unauthorized augmentation of NASA's appropriation.	recommendations. Management stated that the OIG used a narrow interpretation of the broad authority given to the Agency in the Space Act and disputes the underlying premise of the report. Management stated that the transfer of the external tank to Kennedy and the payment of nonappropriated funds to the Stennis Exchange were two separate transactions. We do not agree with management's position and believe it is based on an overly broad and liberal interpretation of not only the Space Act, but also of Kennedy's concession agreement with Delaware North. The documentation supporting this transaction clearly shows that the payment of $500,000 to the Stennis Exchange was dependent on delivery of the external tank to Kennedy and was, in substance, a single transaction rather than two separate and unrelated events. We reaffirmed our position with respect to both the findings and recommendations in the final report and requested management to reconsider its position and provide additional comments.
Audits	Quality Control Review of the H. Larry Jordan Review of Stennis Space Center Exchange Financial Statements for Fiscal Year Ended September 30, 1998 (IG-00-023)	The Stennis Exchange inadequately managed Exchange financial reporting activities. Specifically, the Stennis Exchange (1) retained an accountant to conduct a review, rather than an audit as required by NASA policy, and did not specify that professional standards be followed; (2) submitted the required statements and auditor reports late; (3) did not provide adequate financial statement disclosures; (4) has not established a constitution or bylaws in accordance with NASA	We recommended that the Exchange (1) require that annual audits be performed in accordance with government auditing standards by the established due date and that the engagement for the audit be competitively awarded to Certified Public Accountants licensed to practice in the State of Mississippi; (2) follow established accounting principles in providing adequate disclosures in the notes accompanying the financial statements; and (3) establish a constitution and bylaws at the Exchange.

*No open recommendations

Table 5 – Fiscal Management

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		policy.	Management nonconcurred with recommendations 1 and 3. We requested that management reconsider its position.
Audits	Quality Control Review of Arthur Andersen LLP Audit of NASA Financial Statements for Fiscal Year Ended September 30, 1999 (IG-00-022)	To fulfill our oversight responsibilities, the OIG performed a quality control review of Arthur Andersen's audit, including the audit reports and related working papers, to determine whether the audit was performed in accordance with applicable standards and requirements. The review showed that Arthur Andersen conducted the audit in accordance with government auditing standards and provisions of OMB Bulletin 98-08.	*
Audits	Johnson Space Center Exchange Use of Appropriated funds for Exchange Activities (IG-00-019)	The Johnson Exchange used $5,800 in appropriated funds to pay for the fee of the financial statement audit of the Johnson Exchange. In response to our audit, NASA management agreed to clarify Agency policy on the use of appropriated funds to pay for exchange audits.	*
Audits	Matching Disbursements to Obligations (IG-99-059)	NASA financial management personnel did not properly match disbursements to obligations. Therefore, authorized funds may not have been used for their authorized purpose.	We recommended that procurement offices provide payment instruction to NASA financial management activities so that disbursement can be properly matched to obligations. Management has agreed to revise its financial instructions to address the recommendation. The recommendation remains open until the financial instructions are finalized.
Audits	A-76 Study of NASA-3 Aircraft (IG-99-057)	An audit of an OMB Circular No. A-76 study conducted at Marshall of NASA-3, a mission management aircraft used by Marshall, found that NASA's use of the aircraft to transport personnel and equipment did not qualify as one of the purposes for which Federal policies authorize	*

*No open recommendations

Table 5 – Fiscal Management

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		agencies to own or lease aircraft. We estimated that the costs for using commercial airlines is $2.9 million less than the costs for operating NASA-3 over the 5-year period covered by the A-76 study. We also found that NASA was evaluating a plan to replace three mission management aircraft, including NASA-3, and to upgrade a fourth aircraft. Management had not yet performed an A-76 study supporting the proposed aircraft purchase and upgrade, which would cost $43.9 million. We recommended that management dispose of NASA-3 and use commercial airlines to satisfy Marshall's transportation requirements, revise Agency policy to conform with OMB requirements, evaluate commercial airlines and other aviation services when conducting A-76 studies for aircraft, and terminate plans to replace the existing mission management aircraft. Management either nonconcurred or proposed nonresponsive actions to the report's five recommendations. The Audit Followup Official issued a management decision that nonconcurred with the OIG's position.	
Audits	Implementation of NASA's Integrated Financial Management Project (IFMP) (IG-99-026)	The IFMP contractor did not fulfill its agreement to deliver a fully integrated management system by July 1, 1999. This delay will cause NASA to (1) be less than fully compliant with Federal laws and Agency requirements and (2) incur additional contract costs and maintenance costs for legacy systems that would otherwise be avoided through IFMP implementation.	We recommended the Agency take steps to protect its interests and receive adequate consideration due to the contractor's nonperformance, and that NASA test the final software to ensure it meets all Federal requirements. Management concurred and has initiated corrective actions. We closed two of our three recommendations. We will continue to monitor NASA's negotiations with the contractor.
Audits	Audit of NASA's Full-Cost	NASA is satisfactorily progressing in its efforts to	We recommended that NASA (1) develop a

*No open recommendations

Table 5 – Fiscal Management

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
	Initiative Implementation (IG-99-024)	implement full-cost accounting using alternative methods and to integrate full-cost concepts into the Agency's new financial management system still being developed. However, NASA is not planning to distribute the costs of the Space Shuttle Program to other NASA programs that benefit from Shuttle services. As a result, the financial statement presentations for NASA programs that use Shuttle services will not fairly present the full costs of these other programs.	methodology for distributing the costs of the Space Shuttle program, as well as other service-oriented programs, to programs that benefit from the services and (2) consistently use the methodology developed. Management did not concur with our recommended actions. In September 1999, NASA's Chief Financial Officer initiated an interim approach to implementation of full-cost management, budgeting, and accounting throughout the Agency. We are continuing to analyze the interim approach and strategy being pursued by management and will determine whether this issue needs to be forwarded to the NASA Administrator for a final Agency determination.
Audits	Obligations and Adjustments – Recording Obligations and Adjustments (IG-99-021)	To comply with statutory requirements, NASA is required to establish procedures to promptly record and adjust all incurred obligations. In addition to the legal requirements, managers rely on recorded obligation information for decisionmaking. At four Centers we reviewed, an estimated 17 percent of obligations was not recorded against applicable allotments within 15 working days. Also, the Centers did not make necessary adjustments to obligations in a timely manner. NASA managers concurred with our findings and implemented corrective actions.	*
Audits	X-33 Funding Issues (IG-99-001)	NASA established an arrangement with Lockheed-Martin within the X-33 cooperative agreement to delay billing for completed and Government-accepted milestones until the following fiscal year. As a result of this practice, NASA had unrecorded	Management agreed to study the appropriateness of existing funding and payment practices and to take corrective actions deemed appropriate. However, management's analysis did not indicate what further actions would be taken. We are working with

*No open recommendations

Table 5 – Fiscal Management

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		yearend obligations, costs, and liabilities totaling $22 million in FY 1996 and $34 million in FY 1997. This resulted in Agency reports and the financial statements not being accurate. According to management's analysis, funding practices might have violated the bona fide needs rule (31 U.S.C. 1502(a)) but not the Anti-deficiency Act (31 U.S.C. 1341(a)).	management to resolve the issues.
Audits	NASA's IFMP Time and Attendance/Labor Distribution Module (IG-98-004)	NASA concurred with our recommendation to develop a policy and assess the risks associated with the planned deployment of the Integrated Financial Management Project Time and Attendance module through the World Wide Web. NASA developed necessary management controls for several high-risk areas that we identified in the planned module (modifying and certifying data, prior period adjustments, and access to personnel and payroll data).	*
Inspections	Intergovernmental Personnel Act Assignments to NASA (G-99-018)	We reviewed the Intergovernmental Personnel Act (IPA) Mobility Program as it relates to assignments to NASA. We found that while many individuals assigned to NASA under this program hold key decision-making positions, they are not required to file financial disclosure reports by law or Agency practices. Also, neither are they required to attend ethics briefings nor to discuss their financial issues and outside activities with an Agency Ethics Counselor.	We recommended that: (1) NASA seek legislative authority to apply the same financial disclosure requirements and related sanctions to persons temporarily employed under the IPA as apply to permanent Agency employees in equivalent positions; and (2) NASA, until such authorization is approved, require individuals detailed to NASA as IPAs to discuss financial interests and outside activities with their Ethics Counselor on an annual basis. Management partially concurred with the first recommendation and did not concur with the second recommendation. However, the NASA Administrator recently directed that certain

*No open recommendations

Table 5 – Fiscal Management

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
			counseling and disclosure practices be mandated for IPA detailees.

*No open recommendations

Table 6 – Program and Project Management

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
Audits	Status of NASA's Independent Cost Estimating Capability (IG-00-045)	In 1996, when the Systems and Cost Analysis Division was moved to Langley, the cost estimators remained at Headquarters. Eventually, as the cost estimator positions at Headquarters were vacated, NASA lost its capability to develop independent cost estimates. NASA recently took steps to reestablish its independent cost estimating capability by adding eight cost estimators to the Independent Program Assessment Office (IPAO) at Langley and establishing a Systems Management Office (SMO) with independent cost estimating capability at each Center. A review disclosed that the planned organizational structures for the independent cost estimating function in the IPAO at Langley and the SMO at each Center may not provide for independent reporting of findings directly to the approving official unless the report is specifically requested by the approving official. Also, the IPAO and SMO's are funded through the Centers—a process that may hinder the offices' independence. Consequently, the Agency has no assurance that the opinions, conclusions, and recommendations made to the Administrator on acquisitions for Agency programs and projects are independent in fact and appearance. The review also showed that NASA had not identified the cost estimating and cost analysis function as a discipline with a specific job series, had not established career development plans for its cost estimators, and did not have a requirement to	We recommended that NASA: (1) provide direct reporting of independent cost estimating to the approving official, (2) establish an independent funding and reporting structure for the independent cost estimate function, (3) revise NPG 7120.5A to require an independent cost estimate for each major review, (4) identify a specific job series for cost estimators/analysts, and (5) develop career development plans for the profession. NASA concurred with our recommendation to require independent cost estimates for all major reviews and to develop core training requirements for cost estimators. NASA nonconcurred or partially nonconcurred with our recommendations to provide for direct reporting of independent cost estimates to the approving official and to establish an independent funding source for all independent cost estimating activities. Although the IPAO is funded as a Headquarters function through the Center by the Office of the Chief Engineer (Code AE), and funds are earmarked for the IPAO, Code AE has no way to determine how the funds are distributed. The Center is accountable to Code AE only at the end of the year and may move funds among programs. Centers are only required to notify Headquarters when more than 10 percent of the funds are moved among programs. Management also nonconcurred with our recommendation to identify a specific job series for cost estimators and analysts. We reaffirmed our

*No open recommendations

Table 6 – Program and Project Management

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		develop independent cost estimates for all major reviews.	position and requested additional comments to the final report.
Audits	Research Flight Operations Terminated Prematurely (IG-00-037)	A review of research flight operations at the Glenn indicated that NASA prematurely terminated research flight operations at Glenn without adequately evaluating all of the alternatives, performing cost-benefit analyses, or developing a long-term plan for conducting its icing research program. Management stated that they terminated flight operations because the former Associate Administrator for the Office of Aerospace Technology was concerned that the reduced number of aircraft and the lower flight rate at the Center would create safety problems. However, as a result stopping research flight operations before adequately evaluating the impacts on the research and evaluating alternatives may result in increased costs for that research and decreased research productivity.	We recommended that NASA suspend its plans to transfer aircraft from Glenn until management performs a cost-benefit analysis of the alternatives and prepares a long-term plan for conducting the icing research project. NASA management continues working to complete the corrective actions necessary to close all four recommendations. Glenn continues to fly proficiency flights of two aircraft. A cost-benefit analysis was conducted by Glenn and presented to NASA Headquarters management. Management decided that NASA officials outside of Glenn would conduct an independent assessment. The draft long-term plan for icing research should be completed before December 2000.
Audits	Validating FY 1999 Performance Data to Be Reported Under the Government Performance Results Act (GPRA) (IG-00-020)	The OIG performed an audit to evaluate the accuracy and reliability of NASA's performance information under GPRA. Of the 23 performance targets we reviewed, 5 (22 percent) had written assessments of performance that did not accurately reflect supporting data and actual results. Since the planned reported performance on the five targets we reviewed cannot be considered fully reliable, this may limit its usefulness to NASA, OMB, and the Congress for decision-making. Consequently, the reliability of reported performance for some of the 122 targets not reviewed might also be	*

*No open recommendations

Table 6 – Program and Project Management

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		unreliable. We recommended several actions including establishing formal policies for developing performance goals and targets and validating data on actual achievements. Management concurred with all recommendations and their proposed actions were responsive and closed upon issuance of our final report.	
Audits	Space Flight Operations Contract Phase II – Cost Benefit Analysis (IG-00-015)	The Associate Administrator of the NASA Office of Space Flight directed the consolidation of Space Shuttle contracts in 1995 without a formal cost-benefit analysis. NASA consolidated the prior prime Shuttle contracts into the new prime contract with United Space Alliance in two phases over several years. Significant contracts identified to be consolidated in Phase II have not been consolidated, specifically Space Shuttle main engines, external tanks, and reusable solid rocket motors.	To ensure that NASA makes the best decision about further consolidation, we recommended that NASA perform a cost-benefit analysis and annual verification of the estimated benefits of consolidation. NASA agreed to perform the analysis and annual verification of the estimated benefits.
Audits	X-38/Crew Return Vehicle Project Management (IG-00-005)	As part of an international memorandum of understanding, the United States has agreed to provide a crew-return capability for the ISS. Generally, management of the X-38/CRV Project has been effective, but the Project's rapid prototyping strategy entails significant risk in return for a potentially high payoff as compared to the traditional approach of sequential design, development, test, and engineering/evaluation. To reduce risk and increase assurance of meeting the crew-return capability commitment, the lead Center needed to develop criteria by which to measure readiness to progress through major	Management concurred with the recommendation. The X-38/CRV Project Office developed entry/exit criteria for progressing through the major Project phases but has not documented the criteria in the project plan. During the next reporting period, we will evaluate management's corrective action.

*No open recommendations

Table 6 – Program and Project Management

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		Project phases.	
Audits	Earned Value Management (EVM) at NASA (IG-99-058)	Earned value management information provides insight into the status of a program or project and pro-vides valid, timely, and auditable contract performance information on which to base management decisions. The authority to implement EVM policy should be aligned with the responsibility for program and project management rather than with the fiscal chain of command and fiscal policy directives.	We recommended that NASA (1) issue EVM policy as program and project management directives, (2) establish procedures for reporting comprehensive EVM information to senior management, and (3) delegate authority to implement EVM policy to the Associate Administrators or Center Directors. Management nonconcurred with recommendation 1 and did not respond to either 2 or 3. We met with NASA management on the open issues in June 2000 and continue to work with them to resolve the open recommendations. NASA management stated that the issues would be addressed by December 2000.
Audits	NASA Implementation of the Government Performance and Results Act (IG-99-055)	The Government Performance and Results Act (GPRA) requires Federal agencies to focus on program performance and results. NASA has made substantial progress in implementing the Act, including preparing and updating its Strategic Plan and issuing Performance Plans for FY 1999 and FY 2000. However, Senior management has not (1) provided adequate oversight of overall progress on the established FY 1999 performance targets and (2) established appropriate procedures to ensure the data would be used and were accurate and reliable.	Management agreed to correct the deficiencies. The recommendation to revise a policy guide to address senior management oversight will remain open pending completed action.
Audits	JPL Management of Subcontractor Technical Performance (IG-99-054)	JPL's most significant subcontracts were not subjected to adequate surveillance. Subcontractor data disclosed problems in the designing, building, and safeguarding of hardware and employee noncompliance with quality system procedures. JPL did not act on these problems in a timely	We recommended the NASA Management Office direct JPL to revise policies to require project management assessment and monitoring of subcontractors to ensure procedures are designed and functioning to prevent, detect, and correct technical problems. Management partially concurred with the

*No open recommendations

Table 6 – Program and Project Management

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		manner, in part, due to the lack of surveillance activity.	recommendations but did not identify specific corrective actions. The OIG granted an extension for management to respond until the Mars Polar Lander and Mars Climate Observer investigative reports are issued and summarized and recommendations by the NASA Independent Assessment Team are agreed upon.
Audits	Performance Evaluation Plan for the Earth Observing System (EOS) Data and Information System Core System (ECS) Contract (IG-99-038)	The ECS contractor's performance was not linked to the contract's Performance Evaluation Plan. The award fee plan relied on subjective evaluations by Government personnel as the basis for award fee determinations. The plan did not contain objective measures of performance and, therefore, did not sufficiently link performance objectives to the award fee. Management revised the Performance Evaluation Plan to link award fee payments to specific cost, schedule, and performance objectives in the restructured ECS contract.	*
Audits	Earned Value Management at NASA—ECS Performance Measurement Baseline (IG-99-037)	NASA can improve the use of EVM on the ECS contract by performing an integrated baseline review to substantiate the validity of the contractor's performance measurement baseline. Without a valid baseline, variances may not be detected and addressed with corrective action plans.	Management agreed to review and appropriately revise its Program and Project Management guidance and to perform a baseline review for the restructured ECS contract.
Audits	Audit of X-33 Cooperative Agreement (IG-99-019)	NASA has had limited success using a cooperative agreement on the X-33 Program. However, using a cooperative agreement contributed to program management problems such as (1) program plans, internal agreements, and guidance documents	We made nine recommendations to improve program management and to ensure effective program management practices are followed on future cooperative agreements. Management actions were responsive to all but two recommendations. We

*No open recommendations

Table 6 – Program and Project Management

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		either were not prepared or were not timely; (2) industry partners did not provide required analyses of their cost estimates or submit monthly reports on resource contributions; (3) Center practices for controlling and reporting costs require improvement; and (4) ownership of the X-33 flight vehicle upon program completion has not been determined.	reaffirmed our position on the need for (1) an Agency-unique risk assessment plan, and (2) periodic Estimate at Completion Analyses. Management subsequently concurred with these two recommendations. We will continue to monitor management's actions on the six recommendations that remain open. The failure of the composite hydrogen tank and other program problems has resulted in the restructuring of the X-33 Program. These activities have impacted the completion of the recommended actions.
Audits	Advanced X-ray Astrophysics Facility (IG-99-016)	Launch of the Chandra X-ray Observatory was delayed because of problems in software development and inadequate time scheduled for integration and test activities for the observatory's flight and ground software. Although software development was identified as a high risk, the observatory's Risk Management Plan was not updated because it was not required by NASA policy.	We recommended that management (1) revise the new Program and Project Management policy to require program managers to update Risk Management Plans as high-risk issues arise, and (2) assign personnel with necessary expertise to be on-site at contractor locations when a particular area becomes a significant management risk. The OIG provided input for changes to the planned policy revision. The revised policy is to be issued in February 2001.
Audits	EOS Common Spacecraft Planning and Management (IG-99-011)	Program management for the EOS spacecraft designated as PM-1 and CHEM-1 can be improved in the areas of quality control and communication of award fee determinations. DCMA did not submit an approved Quality Assurance Plan and periodic status reports to the NASA Flight Assurance Manager. In addition, NASA event coordinators made significant changes in the contractor's award fee scores without discussing the changes with the event monitors. Management	*

*No open recommendations

Table 6 – Program and Project Management

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		concurred and completed corrective actions.	
Audits	Earth Science Commercial Data Buy Program (IG-98-025)	One of ten contracts awarded for Phase I of this program duplicated an existing NASA capability to access the same data through current Agency agreements. Cost projections show that NASA could unnecessarily spend an additional $576,000 during Phase II. We recommended that NASA not award a Phase II contract. Management concurred, and NASA will not pursue a Phase II contract.	*
Audits	NASA's Plans to Successfully Achieve the Earth Observing System Scientific Objectives (IG-98-010)	Our audit disclosed that budget cuts would affect NASA's ability to achieve its original EOS Program goals. The Agency partially concurred with our recommendation to reevaluate the EOS goals when it addresses the Earth Science Enterprise's overall science requirements. The EOS goals were reevaluated as part of the Office of Earth Science's research strategy that was completed in May 2000. This action satisfied our recommendation.	*
Audits	Earth Observing System Data and Information System (EOSDIS) Federation Plan (IG-98-002)	NASA did not perform a cost/benefit analysis prior to initiating the pilot program to broaden participation in the distribution of EOSDIS information products through a federation of partners. The Agency concurred with our recommendation and completed corrective action to conduct the analysis before making a decision regarding moving to a federated plan.	*
Inspections	Glenn Research Center Exchange Activities (G-99-016)	The Glenn Exchange, an instrumentality of the Government, is responsible for operating activities that contribute to the efficiency, welfare, and morale of Glenn employees. We found that Glenn	We made 12 recommendations to improve the review, approval and use of Exchange funds; to improve the supporting documentation and controls over expenditures of funds; to ensure compliance

*No open recommendations

Table 6 – Program and Project Management

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		Exchange funds were provided to Center management for activities for which appropriated funds were available. We also found weaknesses in the documentation of and controls over expenditures; concerns over compliance with the Randolph-Sheppard Act; and needed improvements in other administrative and operating areas regarding the Exchange.	with the Randolph-Sheppard Act; to develop an appropriate constitution and by-laws; to fully implement prior audit recommendations; to implement a standard meeting schedule; and to amend the Exchange's insurance coverage to add the United States as an additional insured. Management concurred to the recommendations and is in the process of taking corrective actions. The recommendations are considered resolved pending verification of corrective actions.
Inspections	Assessment of the Triana Mission (G-99-013)	The Triana mission is a relatively new NASA project to build, launch, and operate a spacecraft that will take pictures of the sunlit side of the Earth and transmit them to the Internet 24 hours a day. Total cost for Triana increased considerably as the focus changed from education to science. Based on a circumscribed peer review process, we reported that the added scientific capabilities may not be the best expenditure of NASA's limited science funding. We also reported that the Triana spacecraft, originally conceived as a cooperative effort among university students, industry, and Government, is essentially being built, launched, and operated by NASA. In addition, NASA's major role in developing and launching the spacecraft did not appear to further the goals of the National Space Policy of 1996 and the Commercial Space Act of 1998, which direct NASA to acquire spacecraft and launch vehicles from the private sector whenever possible. We recommended that NASA reassess and modify its approach to the	*

*No open recommendations

Table 6 – Program and Project Management

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		Triana mission. NASA management did not concur with our recommendation.	

*No open recommendations

Table 7 – Launch Vehicles

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
Audits	1998 Shuttle Flight Rate Credit Analysis Not Fully Documented (IG-00-039)	NASA cannot be assured it received fair and reasonable pricing on the Space Flight Operations Contract (SFOC) because the FY 1998 flight rate credit analysis was not fully documented in the contract file in accordance with FAR requirements. Specifically, the SFOC file did not contain the evidence of technical, price, or cost analysis, or verification of direct and indirect rates that the contracting officer should have used to determine whether the FY 1998 flight rate credit of $33.3 million was fair and reasonable. Absent documentation for activity-based costing, there is no basis on which to conclude that adequate technical, price, or cost analysis was performed. As a result, NASA cannot be assured that the $33.3 million credit negotiated with United Space Alliance represented a full contract price reduction from two cancelled flights. Consequently, NASA may be paying United Space Alliance more incentive fee than necessary.	We recommended that the Center Director, determine whether Johnson should continue to use activity-based costing. If activity-based costing is to be used, management should establish policies and procedures that explain how that process can be used to comply with FAR requirements; perform an adequate technical, cost, or price analysis on each SFOC pricing action and document the analysis in the contract file; and verify that the appropriate forward pricing rates are used in the FY 1999 flight rate credit proposal, and document the verification in the SFOC contract file. Management concurred with all recommendations. The Center Director determined that the activity-based costing process is a viable option, has begun the process of updating and expanding guidance for activity-based costing, agreed to strengthen the contract file documentation, and will verify that the contractor has used the correct forward pricing rates in its flight rate credit proposal for FY 1999.
Audits	X-34 Technology Demonstrator (IG-00-029)	The Headquarters Office of Aerospace Technology and Marshall lead the Agency's search for a second-generation Reusable Launch Vehicle (RLV) to reduce launch costs. The $200 million X-34 Project is one of several existing and planned technology demonstrator (X-vehicle) programs being pursued to mature required technologies needed for the next-generation RLV. An audit showed NASA has not adequately performed	We recommended strategic planning be improved, program documentation be completed timely, flight test requirements be revalidated, and any unnecessary flight tests or engines be eliminated. Management concurred with all 16 recommendations, agreeing to implement recommended actions, which should significantly improve the overall effectiveness of Agency management of Space Transportation programs and

*No open recommendations

Table 7 – Launch Vehicles

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		strategic planning for the Space Transportation mission. Specifically, improvements are needed at all levels in preparing effective strategic plans and in the procedures for managing those technologies necessary in developing the next-generation RLV.	projects. Three of the recommendations have been closed. We will continue to monitor management's actions on the 13 recommendations that remain open. The X-34 Project is currently being restructured. These activities have impacted completing the recommended actions.
Audits	Staffing of the Expendable Launch Vehicle Program office at the Kennedy Space Center (IG-00-009)	An OIG audit showed that management oversight of staffing plans during and following the consolidation of the ELV Program Office to Kennedy was inadequate and will affect Kennedy's ability to meet strategic goals and may adversely affect the cost and scheduling of future Earth Science and Space Science missions.	We recommended that management (1) establish clear and realistic staffing goals that align with the strategic performance goals of the ELV Program Office at Kennedy; (2) develop strategic human resources management strategies to ensure continuity of needed skills and abilities; and (3) incorporate these strategies into NPG 7120.5A. NASA has completed corrective actions for two of the three recommendations. A corrective action for the open recommendation requires coordination among several organizational elements. We will continue to monitor management's actions.
Audits	Follow-up on Audit of Orbiter Maintenance Down Periods (OMDP) (IG-98-016)	NASA could save $7.6 million per OMDP by performing maintenance at Kennedy, but would incur significant risk. The Agency reevaluated where OMDP's are performed after the ISS is complete and a less aggressive Shuttle Manifest exists.	*

*No open recommendations

Table 8 – Research and Technology Demonstration/Application

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
Audits	X-33 Cost Estimating Process (IG-99-052)	NASA is using a cooperative agreement for the X-33 Program, a first for a major technology program ($1.1 billion). Under the terms of the cooperative agreement, NASA will provide about 80 percent of the funds and Lockheed Martin Skunkworks will invest at least 20 percent to demonstrate the X-33. However, NASA did not adequately address cost reasonableness and cost risk for the X-33 Program. Cost overruns put NASA's investment in the X-33 Program at risk. Since this is a cooperative agreement, the recipient may end its partnership or request that NASA invest more money should cost overruns become too burdensome.	We recommended that NASA improve its evaluation processes for cost reasonableness and cost risk. The estimate to complete the program should be updated to reflect cost uncertainties and determinations made of how remaining work will be funded. Management issued a Grant Information Circular requiring an analysis be performed using proposal analysis techniques found in the FAR. (Circular applies to cooperative agreements with commercial firms in which the recipient does not share at least 50 percent of the cost or the total value of the agreement is greater than $5 million.) Two recommendations remain open.
Audits	Advanced Air Transport-ation Technologies (AATT) Project (IG-99-030)	The AATT project has developed and the Federal Aviation Administration (FAA) has deployed three decision support tools: Traffic Management Advisor, Surface Movement Advisor, and Passive Final Approach Spacing Tool. Because the technology is so complicated, the transfer of these tools cannot be accomplished successfully without NASA's assistance. Therefore, we emphasized the importance of NASA assisting the FAA to ensure the decision support tools are successfully deployed. To ease the transition, NASA developed a technology transfer plan that will provide for coordination with the FAA.	*
Audits	National Technology Transfer Center's (NTTC) Mission Needs to Be Defined (IG-98-031)	The NTTC fosters NASA and Federal technology transfers with U.S. industry and provides business with access to information, expertise, and facilities. Our audit showed that when NASA	We recommended that NASA (1) clearly define the NTTC's mission, (2) acquire services using the appropriate award instrument, (3) revise monthly report format to include sufficient performance

*No open recommendations

Table 8 – Research and Technology Demonstration/Application

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		directed a shift in technology transfer focus from national to strictly NASA without formally defining NTTC's revised mission, its mission became similar to that of NASA's Regional Technology Transfer Centers. Also, NTTC is not fully integrated into NASA's technology transfer organization.	information, and (4) recover $19,500 of unallowable costs to the NASA cooperative agreement with Wheeling Jesuit University (site of the NTTC). Two recommendations remain open.
Audits	Audit of Commercial Remote Sensing Program Office (CRSPO) (IG-99-023)	The NASA CRSPO has not leveraged the commercial remote sensing industry to provide products that meet baseline scientific requirements. Therefore, NASA has not been able to reduce the costs of remote sensing science and technology programs through competition within the commercial remote sensing industry. We recommended that NASA (1) publish a baseline of scientific requirements to foster competition within the commercial remote sensing industry and (2) use this baseline in initiatives to fulfill NASA's Earth Science objectives at the lowest cost. NASA implemented actions that satisfied the intent of the recommendations.	*
Audits	Management Controls in Earth Systems Sciences Building Contract (IG-98-015)	We found that NASA misused $385,000 of research and development funds for construction (Construction of Facilities funds should have been used). NASA corrected the mistake.	*
Audits	Dissemination of Earth Science Program Data and Information (IG-98-013)	Earth Observing System information was not reaching four of the five intended user groups: (1) education, (2) public sector, (3) technology, and (4) commercial. NASA completed corrective actions to ensure these four groups as well as the scientific users have access.	*

*No open recommendations

Table 9 – International Agreements

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
Audits	Exports on Behalf of Space Station Program May Not Be in Compliance with Applicable Laws and Regulations (IG-00-048)	NASA's international activities often involve the transfer of commodities, software, or technologies to foreign partners not only by NASA, but also by its contractors. The transfers are generally subject to export control laws and regulations, regardless of whether they occur in the United States, overseas, or in space. NASA's contractors are responsible for following the same U.S. export laws and regulations. An OIG audit found that Boeing Space and Communications Group (Boeing) might not have complied with applicable export laws and regulations when exporting controlled items on behalf of the ISS program. NASA, therefore, lacks assurance that Boeing's export activities on behalf of the Agency for the ISS Program are being performed in full compliance with applicable export laws and regulations.	We recommended that management require Boeing to establish an appropriate export control program and a detailed company-wide export policy that comply with applicable laws and regulations prior to authorizing Boeing to utilize NASA-obtained export licenses on behalf of the ISS Program. We also recommended that management periodically review both Boeing and Boeing subcontractors' export control programs to ensure that exports effected against NASA-obtained licenses in support of the ISS Program are being accomplished in accordance with applicable U.S. export laws and regulations. Management concurred with both of the report's recommendations and planned corrective actions that were responsive.
Audits	Controls Over Access to NASA Centers by Foreign Visitors Need Strengthened (IG-00-034)	NASA has a responsibility under the National Aeronautics and Space Act of 1958 to cooperate with other nations in the conduct of its activities. NASA hosts foreign national visitors to: attend meetings or conferences, perform intermittent or regular work on a program related to an international agreement, conduct scientific research under a cooperative educational program, or work for a support contractor. An OIG audit of foreign national visitors at NASA Centers found controls over access to NASA Centers by these visitors needed to be strengthened and uniformly	We recommended that management: (1) revise the definition of a foreign national in NASA policy guidance to ensure controls are in effect at NASA Centers for all visitors who are not U.S. citizens, (2) revise existing policy to establish NASA-wide requirements and procedures for obtaining National Agency Checks and for escorting foreign visitors, and (3) establish a NASA-wide policy for badging foreign nationals. We also recommended the Agency develop and implement a NASA-wide management information system to support the foreign national visitor program. Management concurred with each

*No open recommendations

Table 9 – International Agreements

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		applied on an Agency-wide basis. Controls over access by foreign national visitors varied among the four Centers (Ames, Goddard, Johnson, and Langley). Disparities among the four Centers related to: (1) which foreign nationals were controlled, (2) the types of Government records checks made, (3) how visitors were escorted on-site, and (4) how foreign national visitors were badged. The audit also showed that the Agency lacks a foreign national visitor management information system. Improvements are needed to ensure that NASA Centers and information are adequately protected against unauthorized access by foreign national visitors.	recommendation and planned responsive corrective actions.
Audits	NASA Oversight of Contractor Exports of controlled Technologies (IG-00-018)	An audit found that NASA export, program, and contracting personnel at three Centers could not readily identify the types and amounts of NASA-funded controlled technologies that contractors export in support of NASA programs. Therefore, NASA does not have assurance that contractors are exporting controlled technologies in accordance with applicable U.S. export laws and regulations.	We recommended that management issue guidance that all appropriate NASA contracts require the contractors to deliver (1) a plan for obtaining any required export licenses to fulfill contract requirements, (2) a listing of the contractor licenses obtained, and (3) a periodic report of the exports effected against those licenses. We also recommended that the draft NASA Policy Directive concerning the export control program be revised to incorporate the oversight responsibilities of appropriate NASA officials. Management concurred with each recommendation and initiated corrective actions.
Audits	NASA Teams to Review Payments to the Russian Government (IG-00-006; IG-00-027)	A representative from the OIG Audit staff participated on a NASA team established to determine whether NASA funds paid for the Russian Space Station Mir and the ISS were	*

*No open recommendations

Table 9 – International Agreements

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		properly routed through the Bank of New York to the Russian Space Agency (RSA), appropriately converted into Russian rubles, and promptly paid to Russian subcontractors to support accomplishment of contract milestones. The team concluded that U.S. dollars paid by NASA from June 27, 1997, through June 30, 1999, were received by RSA, properly converted to Russian rubles, and appropriately paid to first-tier subcontractors. A representative of the OIG Audit staff also participated on a separate NASA team, formed at the request of the Associate Administrator for Space Flight, to determine whether NASA funds that the RSA paid to Biopreparat, a major Russian pharmaceutical firm, were properly used for space biotechnology scientific research. The team reviewed the funding process for biotechnology research under the NASA contract with RSA. The NASA team saw no indication that the funds were used for other than the intended purpose. The Inspections staff, however, has examined NASA's controls for the oversight of the funds. See G-00-007.	
Audits	Management and Administration of International Agreements at NASA (IG-00-004)	As of May 1999, NASA had about 3,200 non-reimbursable and 300 reimbursable international agreements. An OIG audit identified that documentation on NASA's international agreements were incomplete and inaccurate. For example, over 20 percent of the agreements listed	We recommended that NASA management establish controls to ensure the (1) completeness and accuracy of documentation and information in the international agreements library and database, (2) promptly review and disposition the funds in the foreign deposit account, and (3) identify other

*No open recommendations

Table 9 – International Agreements

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		in the International Agreements database were not on file in the External Relations International Agreements Library. In addition, agreements related to the Space Station, one of NASA's most significant international programs, were not in the library and were not recorded in the database. As a result, the Agency is relying on incomplete and inaccurate information when drafting new international agreements or responding to inquiries.	reimbursable accounts with no recent cost activity. Management concurred with the recommendations and initiated responsive corrective actions. Management completed actions on recommendations 1 and 2. Management identified an additional 120 international agreements which had an earnest money deposit on hand, and no cost activity since receipt of the initial deposit. Management determined that seven agreements should be cancelled and requested a legal opinion from the NASA General Counsel on the remaining active agreements to determine whether the deposits can be used to finance current program costs, even though the specific payload may not fly until a future year. This recommendation will remain open.
Audits	Audit of NASA Control of Export-Controlled Technologies (IG-99-020)	NASA (1) has not identified all export-controlled technologies related to its major programs, (2) does not maintain a catalog of classifications for transfers of those technologies, and (3) needs improved oversight of training for personnel in the Export Control Program.	We recommended that management ensure that all sensitive technologies are identified and protected, only qualified personnel perform export control audits, and NASA employees are trained in properly classifying and protecting sensitive technologies. Management concurred and has begun corrective actions. All recommendations remain open pending publication of a NASA Policy Directive (NPD) and an NPG on export control. We will continue to monitor management's actions.
Inspections	NASA Oversight of Russian Biotechnology Research (G-00-007)	We reviewed NASA's support of Russian biotechnology research from 1994 to 1997. We found that the contract between NASA and the Russian Space Agency was well designed in some aspects and efficient in transferring funding to Russian research institutes. We found that the	*

*No open recommendations

Table 9 – International Agreements

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		State Department did not discourage NASA from working with Russian biotechnology institutes that had been part of the Soviet biological weapons program. However, when the State Department provided NASA with guidelines on working with potential dual-use biotechnology research, NASA did not follow these guidelines. Moreover, NASA exerted minimal oversight over the research program.	
Inspections	Assessment of NASA's Financial Assistance to Foreign Visitors (G-98-006)	In evaluating support of cosmonauts flying on U.S. missions pursuant to agreements between NASA and the Russian Space Agency, we recommended, among other steps and measures, that NASA factor payments by the foreign governments into calculations of compensation by NASA (management disagreed). NASA agreed that the foreign visitor bank accounts should not be held jointly with civil servants.	*

*No open recommendations

Table 10 – Environmental Management

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
Audits	Compliance with the National Environmental Policy Act (IG-00-030)	Of 13 mission-related programs/projects reviewed at three NASA Centers, 11 (85 percent) did not consider environmental impacts as required by NEPA and NASA guidance. In addition, two of nine construction of facilities projects did not fully comply with NASA guidance for implementing NEPA. The programs/projects that did not comply with NEPA, valued at about $3 billion, potentially were exposed to increased costs, project delays, missed opportunities for preferable alternatives and/or public involvement, and adverse public perception and reaction.	We made nine recommendations addressing needed improvements in NEPA planning, oversight, and training. Management has proposed corrective actions that resolve all of the recommendations. Seven of the recommendations remain open pending completion of management's corrective actions.
Audits	Environmental Aspects of the External Tank Contract NAS8-36200 (IG-99-051)	The production of the external tank for the Space Shuttle still presents the potential for environmental impact. The current external tank contract has not been modified to incorporate the Federal waste reduction program as set forth under FAR part 52.223-10. Consequently, adverse environmental impact may not be minimized and potential recycling benefits cannot be realized.	We recommended that management (1) modify the current external tank contract, if economically feasible, to include a requirement for the contractor to establish a waste reduction program that complies with the FAR requirements; and (2) ensure that the requirement for a waste reduction program is included in the Space Flight Operations Contract (SFOC). Management concurred with the intent of both recommendations. Both recommendations remain open pending completion of corrective actions.
Audits	Cost Sharing for Santa Susana Field Laboratory (SSFL) Cleanup Activities (IG-98-024)	Environmental laws require past and present owners, operators, and generators of hazardous waste to clean up the waste sites. The Rocketdyne contaminated portions of the SSFL during the performance of past Air Force contracts. NASA has not negotiated cost sharing agreements with responsible parties and may have overpaid $16.4	The OIG made four recommendations concerning a cost sharing agreement, recovery of costs, and allocation of future preventive costs. We have closed the two recommendations that address preventive costs. NASA has completed its analysis of recommendations addressing preventive costs and plans to recommend closure of these

*No open recommendations

Table 10 – Environmental Management

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		million in remediation costs. Rocketdyne may also have overcharged NASA $4.7 million in preventative costs through potential Cost Accounting Standards non-compliant allocation practices. NASA could continue to overpay $13.7 million annually.	recommendations. NASA has not begun negotiations of a cost sharing agreement for remediation costs and plans to recommend closure of these recommendations without negotiating a cost sharing agreement. NASA's current position is that the Agency has no legal basis for recovering remediation costs due to the nature of the laws under which cleanup actions have commenced. In addition, NASA admits to having a liability for cleaning up only one of the four contaminated sites at the facility. The remaining sites are the responsibility of other parties. The two recommendations that address cost sharing are unresolved. We are working with management to resolve the issues.
Audits	Kennedy Space Center's Recycling Efforts (IG-98-017)	In evaluating Kennedy's efforts to maximize recycling, we found that the Center's annual progress reports for recycling goals and objectives contained inaccurate and inconsistent data, preventing reasonable measurements of program accomplishments. In addition, Kennedy lacked procedures to retain proceeds from its recycling program, which could be used to promote the Center's recycling goals and objectives. Management concurred with our recommendations and implemented corrective actions.	*
Audits	Lewis Research Center's Hazardous Waste Manifest Process (IG-98-014)	We found internal control weaknesses in Lewis' hazardous waste manifest process that could prevent the Center from ensuring full regulatory compliance and minimizing its liability when disposing of hazardous waste. The manifest is the key document used to track the waste throughout	*

*No open recommendations

Table 10 – Environmental Management

Program Area	*Reports*	*Results*	*Recommendations Pending Corrective Action*
		the disposal process. Center management concurred with our recommendations and implemented corrective actions to strengthen its controls.	
Audits	Efforts to Eliminate Ozone Depleting Chemicals (ODC's) from Space Shuttle Operations (February 25, 1998)	NASA's Shuttle Program has proactively reduced its use of ODC's by 90 percent by finding replacement substances and processes. Although the Agency has taken positive steps to reduce ODC's, we identified seven areas in which the Agency could improve its control over ODC's. NASA has taken or proposed actions that are responsive to our suggestions.	*
Investigations	Partnerships With State, Local and Federal Law Enforcement Agencies Targeting Environmental Crimes	As a result of a joint investigation by NASA Office of Inspector General and other Federal and state law enforcement agencies, a contractor pled guilty to a criminal information for improperly storing and disposing of hazardous waste. The company paid $6.5 million in fines. The OIG and other agencies are pursuing civil claims.	*

*No open recommendations