Statement of
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Before the
SUBCOMMITTEE ON SPACE AND AERONAUTICS
HOUSE COMMITTEE ON SCIENCE
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Mr. Chairman and Members of the Subcommittee,

Thank you for the opportunity to be here today to discuss the FY 2001 Budget Request for Human Space Flight (HSF). The HSF budget funds NASA's Human Exploration and Development of Space (HEDS) enterprise. My office, through its audits and reviews, continues to recommend improvements to NASA's management of this enterprise.

In today's testimony, I will highlight five areas of concern related to HSF-funded programs, projects, and activities. These areas are (1) management of safety and mission assurance; (2) program and project management; (3) commercialization efforts; (4) procurement; and (5) international agreements.

1. SAFETY AND MISSION ASSURANCE

The Administrator has repeatedly stated that safety is the number one consideration in NASA programs, projects and activities. NASA's recent safety and mission assurance initiatives have improved safety awareness throughout the Agency. However, despite the priority placed on safety, independent assessment teams have found safety problems in NASA's human space flight programs, due in part, because of NASA's downsized budget and workforce. I refer you to two recent reports on safety: the NASA Aerospace Safety Advisory Panel (ASAP) annual report for 1999, issued February 2000,[(1)] and the Space Shuttle Independent Assessment Team (SSIAT) report, issued March 7, 2000.[(2)]

My office has found problems that require increased management attention in three safety areas: (a) information systems security, (b) contractor safety programs, and (c) the administration of the payload ground operations contract.

Information Systems Security: We have been examining the (1) continuity of operations in the event of a disaster (earthquakes, hurricanes, etc.) and (2) the security of host operating systems, including those used to support the processing of International Space Station (ISS) and Space Shuttle related systems. We continue to identify significant deficiencies in these critical areas. The result could be the loss of major or unique assets, a threat to human life, or inability of NASA to prepare or train for a critical Agency mission.

Agencies are required by the Office of Management and Budget (OMB) to plan for and implement capabilities to ensure the continuity of operations in the event their mission-related systems are adversely impacted by a disaster.[(3)] In addition, NASA has developed similar requirements.[(4)]

The HSF mission-related systems that we have audited for disaster recovery required improvements.[(5)] Recovery plans for alternative processing sites (until the primary site

could be restored from the effects of a disaster) were insufficient. In at least one case, the plan was not adequately tested.

In one case, NASA has decided to accept the risk of not having backup capabilities for critical systems because of the cost of replicating these capabilities at alternative locations. In this case, a single point of failure is created.

We have only looked at two HSF disaster recovery plans. Nevertheless, based on this work and our audit work on disaster recovery plans for other Enterprises, we are concerned that sufficient emphasis is not being placed on disaster recovery plans.

We also have several audits in progress to evaluate security and integrity controls in host operating systems[(6)] used to support the processing of mission-related information and activities, including one for an HSF program. These audits evaluate systems administration activities that should be in place to ensure adequate security controls are implemented, including system backup, data access and security, and auditing and monitoring. In conducting similar audits in NASA's other Enterprises, we have identified significant weaknesses in controls over physical security, passwords, programs running in a privileged state,[(7)] the protection of critical logs, access to critical system information, administration of authorized system users, and general security auditing and monitoring. Inadequate security and integrity controls at the operating system level could potentially expose a mission-related system to access and compromise by an unauthorized user. Compromise could include denial of service, access to powerful system capabilities, access to sensitive information, or alteration of sensitive system capabilities and information.

Contractor Safety:. As part of an ongoing audit, we reviewed contracts at John F. Kennedy Space Center (Kennedy) and the George S. Marshall Space Flight Center (Marshall). Both Centers administer contracts for many complex NASA operations within the Space Shuttle and ISS programs. The operations we audited included payload processing, orbiter preparation, and launch operations at Kennedy; and the manufacture of the Space Shuttle external tank, main engines, and solid rocket boosters at Marshall. According to NASA Office of Safety and Mission Assurance records for 1998, both Centers incurred most of the costs associated with NASA contractor mishap damage.[(8)]

We are finding that contractor safety programs and their oversight can be improved. Consider the following example: NASA awarded contract number NAS10-98011 to a vendor, Air Products and Chemicals, Inc., of Allentown, Pennsylvania, on December 17, 1997. This contract is a firm fixed-price contract for the vendor to ship liquid hydrogen to several destinations in California and New Mexico. The contract did not contain the required NASA Federal Acquisition Regulation (FAR) safety clause or provision for a contractor safety plan. Moreover, there was no evidence of involvement in the procurement process by the Kennedy safety office. While Department of Transportation (DOT) regulations govern shipping of liquid hydrogen in interstate commerce, DOT regulations do not cover how the center thereafter handles the liquid hydrogen.

NASA is taking action to improve safety with its contractor workforce. Through the Risk Based Acquisition Management initiative,[(9)] the Agency is revising the NASA FAR Supplement to ensure that risk is the core concern of all contracting actions other than those for commercial items. Under this initiative, contractor safety programs will be appropriately reviewed by Agency safety personnel, based on assessed risk, from preaward through contract execution. This revision to the NASA FAR Supplement will apply to *prospective* NASA contracts. Although this represents a positive step by management that should improve safety for future NASA contracts, this strategy does not apply to *existing* contracts. In many of the contracts we reviewed at Kennedy and

Marshall, the Agency has not applied existing basic safety provisions such as required contract safety clauses, contractor safety plans, and Center safety office involvement in the procurement process. Some of these contracts directly support the ISS and Space Shuttle. As a result, NASA contractors, including some involved in hazardous operations, may not be implementing NASA safety goals.(10)

Payload Ground Operations Contract: As part of our audit of NASA contractor safety programs, we addressed concerns provided to us by the House of Representatives Committee on Science. The Committee's concerns focused on the safety functions of the Kennedy Payload Ground Operations Contract (PGOC), valued at $1.9 billion, performed by McDonnell Douglas Aerospace, Space and Defense Systems, a subsidiary of The Boeing Company (Boeing). As the PGOC contractor, Boeing performs payload-processing activities for Space Shuttle and expendable launch vehicle payloads, including flight elements of the ISS. Boeing performs such work primarily at Kennedy in the Space Station Processing Facility (SSPF) and Operations and Checkout (O&C) building.(11) The contract establishes safety responsibilities for Boeing, NASA, and other contractors at various Kennedy processing facilities, including the SSPF and O&C buildings. The Kennedy safety office provides insight into Boeing's operations.

As part of the audit, we discovered that ground workers(12) at Kennedy were using noncompliant and potentially hazardous materials(13) in both the SSPF and O&C buildings that consistently failed required tests for flammability resistance and electrostatic discharge. NASA records show that the materials failed required tests as far back as July 1992. Boeing's safety office did not perform adequate, contract-required inspections of the facilities to ensure that NASA had approved all plastics, foams, and adhesives being used or that ground workers removed unapproved materials from the premises. Beginning in September 1999, NASA authorized variances(14) for the use of some of the materials. This decision was unsupported because neither the Kennedy nor Boeing safety offices reviewed the variances and because Boeing did not perform risk analyses to support the variances, as required by the PGOC contract. As a result, NASA had not identified, documented, appropriately mitigated the risks of using the potentially hazardous materials, exposing ground workers and flight hardware to an increased risk of fire. NASA and Boeing Safety and Materials personnel met in December 1999 regarding the use of these materials in both the SSPF and O&C buildings to discuss future steps in addressing this issue.

Summary: NASA has emphasized safety and mission assurance as the Agency's top priority. However, deficiencies in the protection of critical NASA information systems, contractor safety problems, and improper use of noncompliant and potentially hazardous materials point to a need for increased emphasis in these areas. The work of my office is consistent in many respects with the warnings from advisory groups to NASA about needed improvements in safety management.

2. PROGRAM AND PROJECT MANAGEMENT

NASA has implemented a management system that includes standard policies and processes for formulation, approval, implementation, and evaluation of NASA program and projects. Although this system has the potential to significantly improve program and project management, we continue to find significant deficiencies in this area. Our concerns include ISS performance management, the Space Flight Operations Contract (SFOC), and the X-38/Crew Return Vehicle (CRV).

ISS Performance Management. We recently issued a report on performance management of the ISS program that we initiated at the request of the NASA Administrator.(15) Boeing, the prime contractor for the ISS, announced in late March 1999

that the total of actual and projected cost overruns on the ISS prime contract[(16)] had grown by $203 million, from $783 million to $986 million. This was the third major increase in reported cost overruns for a total increase of $708 million in actual and projected cost overruns during the preceding 2-year period. Boeing attributed part of the cost overrun to unexpected increases in indirect cost rates due to recent reorganization activities, including the merger with McDonnell Douglas Corporation and the acquisition of Rockwell International Corporation. Boeing announced the additional cost overruns shortly after congressional hearings in March 1999 at which ISS Program costs were presented.[(17)]

We concluded that performance management of the ISS prime contract needed improvement. Specifically, from at least October 1998 to February 1999, Boeing reported unrealistically low estimates of projected cost overruns to NASA management. Although there was ample evidence of cost performance problems, (including evidence from information provided by Boeing), the ISS Program Office did not effectively challenge the contractor's estimates and, as a result, paid unearned incentive fees totaling $16 million. NASA later recouped the fees based on the contractor's subsequently reported poor cost performance. However, at the time the incentive fee was paid, NASA possessed information that clearly indicated the improbability of Boeing achieving its estimates.

As part of the audit, we addressed Boeing's proposal to charge NASA an estimated $82 million[(18)] for reorganization costs at the same time Boeing's military and commercial groups enjoyed proposed, overall net savings as a result of the reorganization. We are also monitoring whether, because Boeing submitted the provisional upward billing rates with little or no warning to NASA, NASA may be paying higher costs than necessary before the Government completes its review and negotiation of the proposed higher pricing and billing rates.

During our review, Boeing agreed to work with NASA to identify future savings that could offset the increased costs. We made other recommendations aimed at strengthening ISS performance management and minimizing or eliminating the cost impact to NASA of contractor restructuring activities.[(19)]

Space Flight Operations Contract (SFOC) Phase II - Cost-Benefit Analysis: A recent audit[(20)] concluded that NASA did not perform a cost-benefit analysis to ensure that consolidation of Space Shuttle contracts into the SFOC[(21)] is in the best interest of the Government. Without a cost-benefit analysis, NASA cannot be certain that further consolidation of about $10 billion in additional Space Shuttle contracts will result in a net savings to the Government.

Related to our efforts in reviewing the SFOC contract, we are also looking at whether NASA is realizing full savings from cancelled Shuttle flights. Specifically, we are reviewing the flight rate credit negotiated with United Space Alliance (USA) on the SFOC when Shuttle flights do not occur at the forecasted annual rate. NASA estimated in 1998 that the marginal cost of deleting a Shuttle flight during FY 1998 was $18.9 million for SFOC-related costs. We will determine whether the flight rate credit received is fair and reasonable.

X-38 Crew Return Vehicle (CRV) - Need for Increased Risk and Performance Management: The United States is committed to providing a crew return capability for the ISS in the event of crew injury/illness, ISS failure, or Space Shuttle unavail-ability. The X-38/CRV is NASA’s project to meet this commitment. The X-38/CRV Project is responding to a challenge by the NASA Administrator to demonstrate that human-rated spacecraft can be developed faster and for a fraction of the cost of previous projects. NASA is designing, building, and conducting the initial flight tests of the X-38 and will use

a contractor to build the CRV. As of January 2000, the Project's budget was $124.3 million for the X-38 segment and $952 million for the CRV segment.

We found that the X-38/CRV Project entails significant risk.[22] The Project is relying on a high degree of concurrency among design, development, and test and engineering/ evaluation activities and a highly optimistic schedule for accomplishing development and production of the CRV. The Project's reliance on this high degree of concurrency warrants a greater emphasis on risk and performance management and the use of performance metrics and criteria for key Project phases.

NASA concurred with our recommendation to establish criteria for entering subsequent acquisition phases. The X-38/CRV project managers have developed criteria for progressing through major project phases. These criteria will be approved at the ISS Integration Control Board and documented in the X-38/CRV Project Plan Update in April 2000.[23]

Summary: Sound program and project management is a key element for NASA to accomplish its mission in the face of declining or flattened budgets. For HSF programs, managers must accurately assess their programs' cost, schedule, and technical progress, apply cost-benefit analyses to key decisions, and actively seek to mitigate risks.

3. COMMERCIALIZATION

Section 434 of Public Law 106-74 requires NASA to establish a demonstration program regarding the commercial feasibility and economic viability of private sector business operations involving the ISS and its related infrastructure. This law requires NASA to establish and publish a price policy designed to eliminate price uncertainty for commercial users of ISS. Congress required this demonstration program to test the feasibility of commercial ventures using ISS and to determine whether it is possible to operate the ISS in accordance with commercial practices. Congress intends that the results of this demonstration program will be incorporated into NASA's planning for the long-term commercialization of ISS.[24]

HSF Reimbursable Pricing Policies for Commercial Users. We have found that NASA has no assurance that it receives adequate consideration for its support of commercial space activities. A pricing policy for commercial users of the HSF assets is clearly needed. For example, we audited the Research and Logistics Mission Support (ReALMS) Contract with SPACEHAB, Inc.[25] The ReALMS contract provides flight opportunities for research missions and supports logistics needs of ISS. SPACEHAB's pressurized modules are flown on Space Shuttle missions and provide integration and operation services for NASA payloads. The SPACEHAB modules fit in the Space Shuttle Orbiter, act as the payload carrier, and interface between the Orbiter and the payloads on each mission. For some Shuttle flights, NASA does not need all of the SPACEHAB module's capacity. Under the fixed-price ReALMS contract, NASA received consideration (a price reduction) for the anticipated capacity that SPACEHAB could allocate to commercial customers. In addition to reducing NASA's price, sharing the module allows for international partner participation and commercial development of space.

We determined that the Office of Space Flight had not established clear guidance for calculating the amount of transportation costs allocable to commercial customers. Different methodologies can result in significant variances in the amount of consideration due NASA. For example, we used the methodology specified in the SPACEHAB Phase I contract (an earlier SPACEHAB contract) to determine the amount of consideration for two flights using SPACEHAB modules with commercial customers. We calculated that

NASA should have received consideration of $27.3 million. However, the contracting officer on the ReALMS contract used a variation of the SPACEHAB Phase I contract formula. Under this variation, the contracting officer calculated that consideration of about $8.2 million was due NASA--$19.1 million less than the amount we calculated. This case evidences the significant variations in reimbursement that can result without a pricing policy. We recommended that the Office of Space Flight develop guidance for calculating transportation fees for commercial payloads flown on SPACEHAB. Management agreed and stated that it is developing a commercialization plan for the ISS and that SPACEHAB would participate in this plan. However, our recent follow-up has found that the ISS commercialization plan is incomplete. This plan is essential for NASA's implementation of Public Law 106-74.

Relation of Full-Cost Accounting to Shuttle Pricing Policy for Space Shuttle Launches: OMB has recently instructed NASA to prepare a comprehensive Space Shuttle pricing policy that addresses the full cost of Shuttle operations, consistent with full-cost accounting requirements.(26) We agree with OMB that a comprehensive Shuttle pricing policy is needed, consistent with full-cost accounting requirements.

An audit(27) of full-cost accounting implementation at NASA concluded that NASA could improve the presentation of total program costs by distributing the costs of programs that provide services, such as the Space Shuttle program, to programs that benefit from the services. Federal financial accounting standards state that costs of supporting services should be assigned to segments of the entity that benefit from the services. In addition, OMB Bulletin No. 97-01, "Form and Content of Agency Financial Statements," requires that the full costs of programs be reported in each agency's financial statements. Determining the full cost of Shuttle launch services would aid in the development of fair pricing policies, although we recognize that a variety of factors should be considered in pricing determinations. Rather than allocate the costs of the Space Shuttle program to benefiting programs, NASA plans to continue to show these costs as separate line items in its financial statements. Consequently, NASA has not developed the methodologies necessary to distribute Shuttle costs to programs that benefit from its service. Distribution of Shuttle costs to benefiting programs would more accurately present the full cost of programs for NASA managers who rely on this information to effectively oversee their programs.

Because NASA does not distribute Shuttle programs costs in the financial statements, the costs of NASA programs that benefit from Shuttle services do not include the costs of those services. Thus, NASA's presentation of the cost of those programs beginning with FY 1998 are understated by about $3 billion per year.

Summary: NASA needs a fair, consistent and public pricing policy to encourage commercial uses of the ISS and Space Shuttle. The Agency is presently considering flying commercial payloads in SPACEHAB modules on two Space Shuttle flights and Department of Defense payload on another Shuttle flight. Thus, the need for a pricing policy is evident.

4. CONTRACT MANAGEMENT

NASA's procurement obligations account for approximately 85 percent of the Agency's total obligations. As a result, good contract management is key for the Agency's efficient and effective use of its resources. We have contract management concerns in three areas: earned value management,(28) contract and subcontract oversight activities, and noncompetitive procurements.

Earned Value Management (EVM): Earned value management helps the program/project managers to balance technical (performance), cost (resources), and schedule (time) aspects of a program or project. It is a management tool that provides project managers valid, timely, auditable contract performance information for decision-making purposes. Properly used, EVM can provide insight into emerging cost drivers such as technical problems that can be addressed early on, thus avoiding (or limiting) cost and schedule impacts.

A recent audit concluded that NASA has made progress in implementing EVM as a tool.[(29)] For example, NASA created the EVM Focal Point Council to provide a consistent approach for implementing EVM throughout NASA, established Agency-wide provisions and clauses for use in solicitations and contracts when EVM is required, and improved communications on EVM with other Government agencies and industries. Further, NASA is developing a Memorandum of Understanding to clarify the Defense Contract Management Command (DCMC) responsibilities for EVM surveillance.

However, to effectively use EVM as a management tool, it must be an integrated part of program and project management. To accomplish this, the Agency can make some improvements. EVM policy has not been consolidated as an overall program and project management responsibility, and managers do not provide comprehensive EVM information to the Program Management Council (PMC).[(30)] At NASA, EVM policy has been delegated to the Chief Financial Officer, while the day-to-day responsibility for EVM implementation rests with the program and project managers. However, EVM is not primarily a financial tool. In our audit of the performance management of ISS, we observed the negative effects of the current alignment. We found that EVM information was not sufficiently emphasized or used by program management for monitoring performance and making incentive fee determinations. EVM information was primarily used for financial purposes such as allocating funds to cover cost risks.

Noncompetitive Procurements: NASA's FY 1998 procurement obligations totaled more than $12.5 billion, of which $9.7 billion[(31)] was available for competition. Of the $9.7 billion, NASA obligated more than $4.4 billion (45 percent) for noncompetitive procurement actions. NASA prepares a Justification for Other than Full and Open Competition for a noncompetitive procurement to support the use of noncompetitive procedures. Appropriate officials certify the justification for completeness and accuracy.

An audit concluded that NASA's technical analyses for many noncompetitive procurement actions were inadequate.[(32)] In addition, many noncompetitive purchase order awards did not contain the documentation supporting determinations of price reasonableness required by acquisition regulations. Therefore, NASA management lacked assurance that the Agency obtained a fair and reasonable price for supplies and services. For example, we noted the Johnson Space Center (Johnson) contracting officials lacked support for whether fair and reasonable noncompetitive prices were obtained on some ISS-related contracts.

We recommended that the contracting officers and technical analysts communicate more to improve the quality and usefulness of technical analyses, including providing regulations, guidance, and prior technical reports to analysts for reference purposes. Further, analysts should document all fact-finding meetings to better support their conclusions. Lastly, management should ensure that contracting officers and purchasing agents receive refresher training on the documentation required to adequately support pricing decisions on noncompetitive purchase order awards. Management concurred with all the recommendations. NASA management will reemphasize the importance of quality technical analyses. NASA will also provide training relative to technical analyses and the pricing of noncompetitive purchase order awards.

Contractor Purchasing Systems: Recent audits[(33)] of two Johnson contractors' purchasing systems verified that contractor officials appropriately awarded and managed subcontracting activities on their NASA contracts, but did not always adequately support noncompetitive procurements. Justifications were missing for three of four noncompetitive procurements that we reviewed at one contractor location. Similarly, justifications for all four sampled noncompetitive procurements were missing at the second contractor location.

Contract Audit Follow-up: Recent audits[(34)] found that NASA policies and procedures for resolution and disposition of contract audit findings and recommendations comply with OMB Circular A-50 requirements.[(35)] However, the contract audit follow-up systems can be improved. The system did not include complete records of actions taken on findings and recommendations for many Defense Contract Audit Agency (DCAA) audit reports for which resolution and disposition authority had been delegated to the DoD.[(36)] Further, when NASA retained authority for resolution and disposition of audit findings, reportable contract audit reports[(37)] were not always resolved or dispositioned in a timely manner as required by the OMB Circular. As a result, NASA could not ensure that the resolutions were in NASA's best interest. In addition, NASA funds that should have been disallowed, withheld, or reduced could not be reallocated to other NASA programs.

Summary: NASA can improve contractor oversight through use of EVM, by strengthening controls over noncompetitive procurements and by improving contract and subcontract oversight activities. Our audit work (and investigations) found weaknesses in many aspects of the procurement process that have left NASA vulnerable to crime, fraud, unreasonable prices, poor quality goods and services, and other negative mission impacts. Given that the HSF appropriation is used principally on long-term contracts with a limited number of major contractors, it is imperative that NASA remain vigilant in its contract oversight role and ensure that its business decisions are fully supported by analytical and factual evidence. However, we often find that sufficient resources are not devoted to implementing the controls outlined in the FAR.

5. INTERNATIONAL AGREEMENTS

HSF programs involve numerous international partnerships. These partnerships place additional requirements on how NASA conducts its business and require increased technology security controls.

Space Station Contingency Planning for International Partners: The Space Station Program Office had developed a draft "International Space Station Program: Overview of Contingency Plans" (the Program contingency plan). Our audit[(38)] concluded that the international program contingency plan did not include nor clearly identify, several critical elements for effective risk management, as required by Agency guidance. Specifically, the plan contained neither cost and schedule impacts of implementing contingency actions nor clear mitigation measures. It also did not include some actions being taken to prevent further Russian delays. Because the Program contingency plan was not complete, NASA could not fully reduce Space Station risks through advanced planning and the establishment of response plans. Further, without estimated costs, the Agency, the Administration, and the Congress could not adequately assess the feasibility of proposed responses or determine their budgetary impact. NASA has revised the draft Program contingency plan,[(39)] and we are reviewing it to determine whether full and appropriate corrective actions continue to be taken.

NASA Export Control: An audit[(40)] disclosed that NASA did not identify all export-controlled technologies related to its major programs and did not maintain a catalog of classifications for transfers of export-controlled technologies. Also, Agency oversight of,

and training for, personnel in the Export Control Program needed improvement. Specifically, annual audits of each Center's[41] export control system were not adequately performed and NASA personnel lacked training in controlling and documenting export-controlled technologies. As a result, NASA may not have had adequate control over export-controlled technologies to preclude unauthorized or unlicensed transfers. NASA agreed with our recommendations and is implementing appropriate action.

Foreign National Visitors at NASA Centers: NASA has established export policies and procedures for approving the release of information to foreign nationals. We are looking at controls at Ames Research Center (Ames); Goddard Space Flight Center (Goddard); Johnson; and Langley Research Center (Langley); and approvals or reviews by Center Export and Security Officials and the Office of External Relations.

An ongoing audit has tentatively concluded that controls over access to NASA Centers by foreign national visitors need to be strengthened and uniformly applied on an Agency-wide basis to ensure consistent Agency protection of sensitive technology. Controls over access by foreign national visitors varied among Ames, Goddard, Johnson, and Langley. Disparities among the four Centers included (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 lacked a central 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.

Verification of NASA Payments to the Russian Space Agency (RSA):[42] In early September 1999, the NASA Administrator requested that a NASA team be formed to determine whether NASA funds paid to Russia for joint human space flight activities were reaching their intended destination. The NASA team included financial, procurement, and technical officials from Johnson; an auditor from my office; and an auditor from Arthur Andersen, a major public accounting firm. Specifically, the team's objective was to determine whether funds paid on NAS15-10110 (the RSA contract) were properly routed to RSA (in Moscow, Russia) through the Bank of New York, appropriately converted into Russian rubles, and promptly paid to first-tier Russian subcontractors for deliverables specified in the contract. 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 paid to first-tier subcontractors in a timely way to support accomplishment of contract milestones. We reported our results to the Chairman, House Committee on Science, on November 30, 1999.

Verification of RSA Payments to Research Institutes: On January 27, 2000, the NASA Associate Administrator for Space Flight directed that a NASA team be formed to review the funding process for biotechnology research under the RSA contract to determine whether NASA funds were used for their intended purpose. NASA directed the review because a January 25, 2000, *New York Times* article reported an allegation by certain Russian scientists that some of the $1.65 million that NASA provided to fund biotechnology research may have been inappropriately redirected by Biopreparat. According to the *New York Times*, Biopreparat had allegedly run the USSR's biological warfare research effort. The NASA team included financial, procurement, and technical officials from Johnson. My office also sent an auditor to accompany the team.[43]

From February 1995 through January 1998, NASA paid RSA $20 million for space-related scientific research under terms of the RSA contract. Of the $20 million, RSA paid Biopreparat $1.529 million[44] for space biotechnology scientific research.[45] Of the $1.529 million, Biopreparat distributed $1.368 million (89.5 percent) to its eight subcontractors and retained $0.161 million (10.5 percent). The activities associated with

the $0.161 million were carried out directly by Biopreparat under terms of an RSA contract with Biopreparat. The contract price structure showed how Biopreparat planned to use the funds that it retained. Also, RSA submitted periodic reports to NASA as contract deliverable items, which NASA accepted as satisfactory completion of the planned research.

The team performed only a verification of the funding process. A verification of the funding process can determine the sources, recipients, and amount of funds paid. However, only through additional steps, such as gaining an understanding of the entity, observing its operations, and obtaining independent third party information, might a positive assurance be given on how the funds were actually used. Contractual access is limited to examination of financial information of RSA and its first-tier subcontractors.

Summary: NASA has formed numerous international partnerships, including with Russia, to accomplish its HSF missions. However because of Russian funding problems, NASA must maintain current and accurate contingency plans for the ISS. These international partnerships also require NASA to implement appropriate controls to protect its sensitive technologies.

CONCLUSION

Programs funded by the HSF appropriation such as the ISS and Space Shuttle are some of the most visible signs of our national investment in space exploration. To maximize the return on this investment, NASA and its contractors must fully embrace the need for robust safety programs, sound acquisition management, fair and reasonable contract pricing and cost-charging practices, and protection of sensitive technologies.

Thank you, and I would be happy to answer any questions.

FOOTNOTES:

1. ASAP serves as a senior advisory board to the NASA Administrator on hazards to proposed or existing facilities and operations. In its 1999 annual report issued in February 2000, ASAP stated that cutbacks and reorganizations over the past several years have resulted in problems related to: workforce size, critical skills, on-the-job experience, and the transition of responsibilities from NASA to its contractors. ASAP concluded that these problems have the potential to impact the safety of the Space Shuttle as its launch rate increases to meet the demands of the international Space Station. The full text of the ASAP report can be found on the Web at http://www.hq.nasa.gov/office/codeq/codeq-1.htm.

2. During the launch of STS-93 in July 1999, two serious anomalies occurred. As a result of those and other incidents, the NASA Associate Administrator for Space Flight, in September 1999, called for an indepedent team to review the Space Shuttle systems and maintenance practices. The SSIAT report major concerns regarding erosion in the safe operation of the Space Shuttle Program, echoing many of the concerns reported by the ASAP. The full text of the SSIAT's report can be found on the Web at http://www.hq.nasa.gov/osf/siat.pdf.

3. OMB Circular A-130, "Management of Federal Information Resources," Appendix III, states that "inevitably there will be service interruptions. Agency plans should assure that there is an ability to recover and provide service sufficient to meet the minimal needs of

users of the system." See also, "Federal Information Processing Standards (FIPS) #87, 'Guidelines for Automated Data Processing Contingency Planning'," published by the National Institutes of Standards and Technology.

4. NASA Procedures and Guidelines (NPG) 2810.1, chapter 5, section 5.3.2, requires that each system have an IT Security Contingency Plan.

5. Report IG-99-017, "Disaster Recovery Planning at Kennedy Space Center," March 31, 1999; and Report IG-99-005, "Disaster Recovery Planning at Johnson Space Center," January 15, 1999.

6. An operating system is complex software that manages the basic operation of a computer system. Each computer system containing an operating system is referred to as a host.

7. Programs running in a privileged state have the ability to bypass system security controls and must, therefore, be strictly controlled.

8. NASA Policy Directive (NPD) 8621.1G, "NASA Mishap Reporting and Investigation Policy," defines a mishap as "any unplanned occurrence or event resulting from a NASA operation or NASA equipment, involving injury or death to persons, damage to or loss of property or equipment, or mission failure."

9. The Agency established Risk-Based Acquisition Management as a NASA procurement initiative in April 1999 to reduce the likelihood and severity of impact from unforseen 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.

10. Contracts reviewed at Kennedy and Marshall did not always include basic requirements to ensure safety. Specifically, all contracts that we reviewed did not include basic requirements such as the NASA FAR Supplement safety clause and a NASA-approved, contractor safety plan. 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. Three of the questioned contracts involve extremely hazardous operations, and three are with contractors who have been involved in NASA mishaps. In addition, eight of the questioned contractors have had prior safety violations as reported by the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA).

11. The SSPF was built for processing ISS flight hardware. It is a three-story, 457,000 square foot building that includes two processing bays, an airlock, operational control rooms, laboratories, office space and a cafeteria. The O&C Building is used for receiving, assembling, and integrating Shuttle payloads. It is a five-story building containing 600,000 square feet of offices, laboratories, astronaut crew quarters, and spacecraft assembly areas.

12. Ground workers include personnel from NASA-Kennedy, Boeing PGOC, Boeing Space Station Contract, and other contractor personnel authorized to work on payloads in the SSPF and O&C buildings.

13. The PGOC, by reference to several sources, requires that all plastic films, foams, and adhesive tapes used in Kennedy processing facilities meet basic safety standards for flammability resistance and electrostatic discharge (ESD) (as defined in Kennedy

Handbook 1710.2, "Kennedy Space Center Safety Practices Handbook"). At Kennedy, the NASA Materials Sciences Lab is responsible for testing all materials against flammability and ESD requirements. NASA and Boeing personnel can use materials that do not pass required tests; however, NASA and Boeing are required to prepare a variance for the use of such materials and to ensure that the associated risks are properly managed.

14. NASA Handbook 1700.1, "NASA Safety Policy and Requirements Document," defines a variance as documented and approved permission to perform some act contrary to established requirements. The lowest organizational-level or program-level manager having responsibility to implement safety requirements will submit the variance. Safety officials must concur or nonconcur with the requests, but are not the approving officials. The approving official depends on the requirement that is being waived. The approving official is generally the NASA Center Director for Center-specific requirements, or the NASA Headquarters Enterprise Director for NASA-wide requirements. The NASA safety manual has a detailed matrix describing review and approval authority for certain types of variances. All variances must be accompanied by the documented reasons for not meeting the requirement, risks involved, and alternative means considered to reduce the hazard.

15. Report IG-00-007, "Performance Management of the International Space Station Contract," February 16, 2000.

16. NAS15-10000 is the contract number for the ISS prime contract with Boeing.

17. The Administrator testified on March 18 and 23, 1999, before the Senate and House Appropriations Subcommittees.

18. Of the estimated increased costs of about $153 million for calendar year 1999, Boeing's Space and Communications Group proposed that NASA be charged an estimated $82 million, including $21 million for the ISS Program. Also, the ISS Program would be charged an additional $14 million through contract completion.

19. For example, the performance management of the contract can be improved if risk mitigation plans are in place for all known risks. Also, NASA should apply a higher weighting for cost performance in future award fee evaluations on ISS-related contracts. Further, NASA should monitor Boeing's cost and savings performance on the external restructing activities and direct Boeing to ensure that the cost and savings requirements of the Defense Federal Acquisition Regulation Supplement are equally applied to the external restructuring costs and savings attributable to the ISS Program. Additionally, significant issues should be coordinated wilth the Defense Contract Management Command (DCMC) to ensure that NASA is advised of contract increases and that ISS Program interests are adequately protected.

20. Report IG-00-015, "Space Flight Operations Contract Phase II -- Cost Benefit Analysis," March 14, 2000.

21. Under SFOC, which began in 1996, United Space Alliance (USA) became the prime contractor for all Shuttle missions. Accordingly, USA assumed responsibility for ensuring all Shuttle missions manifested by NASA are successfully accomplished. The contract has two phases within which NASA consolidates prior prime contracts over several years as USA assumes greater responsibility. The contract is currently in Phase II; however, the most significant portion of Phase II has not been completed, specifically, the portion

related to the Space Shuttle main engines, external tanks, and reusable solid rocket motors.

22. Report IG-00-005, "X-38/Crea Return Vehicle (CRV) Project Management," February 9, 2000.

23. In a related audit, we recommended that planning for operational testing of the CRV should be performed and reliance should not be placed solely on space flight testing of the X-38, which is a scaled down prototype of the CRV configuration. Report IG-99-036, "X-38/Crew Return Vehicle (CRV) Operational Testing," September 20, 1999.

24. Conference Report on H.R. 2684, "Departments of Veterans Affairs and Housing and Urban Development, and Independent Agencies Appropriations Act, 2000," October 13, 1999.

25. Report IG-98-028, "Audit of Transportation Costs for Non-NASA Payloads Flown in the SPACEHAB Module," September 8, 1998.

26. The requirements are stated in the December 6, 1999, letter from the Office of Management and Budget, *op. cit.*

27. Report IG-99-024, "NASA's Full-Cost Initiative Implementation," March 31, 1999.

28. Earned value management provides the managers with the tools to quantify the extent of the contract overrun or underrun conditions.

29. Report IG-99-58, "Earned Value Management at NASA," September 30, 1999.

30. The PMC is the senior management group that is chaired by the NASA Deputy Administrator and is responsible for recommending approval for and overseeing implementation of proposed programs according to Agency commitments, priorities, and policies. Other PMC's have been established at the NASA Center level.

31. More than $2.8 billion was not available for competition. The $2.8 billion in procurements involved the sole source contract for the operation of the Jet Propulsion Laboratory; grants, cooperative agreements, and awards to other government agencies; and small purchases costing less than $2,500.

32. Report IG-99-056, "NASA Noncompetitive Procurements," September 28, 1999.

33. Report IG-00-002, "Raytheon Subcontract Management," December 21, 1999; and Report IG-99-042, "Allied-Signal Subcontract Management," September 16, 1999.

34. Report IG-00-010, "NASA Contract Audit Follow-up System at Marshall Space Flight Center," March 6, 2000; and Draft Report A9904500, "NASA Contract Audit Follow-up System at Johnson Space Center," February 11, 2000.

35. OMB Circular A-50, "Audit Followup," September 29, 1982, requires all agencies, including NASA, to establish audit follow-up systems to "assure the prompt and proper resolution and implementation of audit recommendations." It also requires that the follow-up systems provide for a complete record of action taken on both monetary and nonmonetary findings and recommendations.

36. When contractors have both DoD and NASA contracts, NASA may delegate to the DoD contract administration functions, including resolution and disposition authority on DCAA audit findings and recommendations. Disposition is achieved when the contracting officer renders a decision as to the treatment of the audit recommendation and has executed a contractual document with the contractor.

37. The DCAA provides NASA a monthly list of audits that are identified as reportable contract audits because NASA has the authority to resolve and disposition the audit findings and recommendations. The report in question involved an incurred cost audit for which the reporting threshold is questioned costs of $100,000 or more.

38. Report IG-99-009, "Space Station Contingency Planning for International Partners," March 9, 1999.

39. The program contingency plan has been renamed the ISS Program Off-Nominal Situation Plan.

40. Report IG-99-020, "NASA Control of Export-Controlled Technologies," March 31, 1999.

41. Of the three Centers' (Johnson Space Center, Glenn Research Center, and Marshall Space Flight Center) annual export control audits that we reviewed, Marshall Space Flight Center showed greater attention to fulfilling the Program requirements.

42. RSA is now known as the Russian Aviation and Space Agency (Rosaviakosmos).

43. In addition to this financial review of the funding, we have an ongoing inspection of NASA's internal controls of the funding research by the Biopreparat.

44. The $1.529 million was paid in rubles (about 7.904 billion) at an average pre-1998 conversion rate of about 5,170 rubles to a dollar.

45. RSA also paid about $0.121 million to the Shemyaking Ovchinnikov Institute of Bioorganic Chemistry, which constitutes the balance of the $1.65 million that NASA paid for biotechnology research.