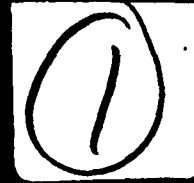
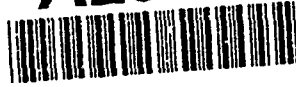


United States General Accounting Office

GAO

High-Risk Series

AD-A263 092



December 1992

# NASA Contract Management



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Washington, D.C. 20548

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**Comptroller General  
of the United States**

December 1992

The President of the Senate  
The Speaker of the House of Representatives

In January 1990, in the aftermath of scandals at the Departments of Defense and Housing and Urban Development, the General Accounting Office began a special effort to review and report on federal government program areas that we considered "high risk."

After consulting with congressional leaders, GAO sought, first, to identify areas that are especially vulnerable to waste, fraud, abuse, and mismanagement. We then began work to see whether we could find the fundamental causes of problems in these high-risk areas and recommend solutions to the Congress and executive branch administrators.

We identified 17 federal program areas as the focus of our project. These program areas were selected because they had weaknesses in internal controls (procedures necessary to guard against fraud and abuse) or in financial management systems (which are essential to promoting good management, preventing waste, and ensuring accountability). Correcting these problems is essential to safeguarding scarce resources and ensuring their efficient and effective use on behalf of the American taxpayer.

93-4-16-163

This report is one of the high-risk series reports, which summarize our findings and recommendations. It describes our concerns over the National Aeronautics and Space Administration's (NASA) lack of adequate controls over a variety of contract management and related activities. NASA has implemented or begun to implement most of the recommendations we have made for improving these activities. NASA has also implemented other contract management improvement initiatives.

Copies of this report are being sent to the President-elect, the Democratic and Republican leadership of the Congress, congressional committee and subcommittee chairs and ranking minority members, the Director-designate of the Office of Management and Budget, and the Administrator of the National Aeronautics and Space Administration.

*Charles A. Bowsher*

Charles A. Bowsher

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## Contents

Overview	6
Lack of Realism in Planning	10
Ineffective Oversight of Some Contractors	15
Some Centers Not Fully Complying With Procurement Requirements	22
NASA's Efforts to Improve Contract Management and Related Areas	31
Conclusions and Action Needed	35
Related GAO Products	38
High-Risk Series	41

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## Overview

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The National Aeronautics and Space Administration's (NASA) procurement budget is one of the largest of all civilian agencies' in the federal government. Each year, NASA spends about 90 percent of its funds on contracts. In the last decade, the value of NASA procurements measured in 1990 dollars has risen dramatically from about \$8.5 billion to almost \$13 billion annually.

Throughout the procurement cycle—from the development of procurement plans, through the award and performance of contracts, to their final settlement—NASA must act to protect the government's rights and interests. An important part of this process involves overseeing contracts after their award in order to help ensure that contractors are acting in accordance with their obligations and are performing as efficiently and effectively as possible.

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### The Problem

Since the late 1980s, NASA has acknowledged that its contract management is vulnerable to waste and mismanagement, based on its own internal management reviews and audits by the NASA Inspector General. We also have reviewed specific activities in a variety of areas related to contract management in recent years and have

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Overview

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reported that NASA has had problems in effectively managing its contracts.

Without effective management of its contracts, NASA cannot reasonably ensure that the funds provided to its contractors will be spent effectively and accounted for properly. In some cases, inadequate contractor oversight has contributed to cost increases, schedule delays, and development problems with expensive space equipment. For example, the GOES-next weather satellite project is now at least 3 years behind schedule, and its estimated cost has more than doubled to over \$1.7 billion. Also, the \$1.5 billion Hubble Space Telescope had critical technical flaws that were not detected until after it was launched.

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The Causes

NASA's difficulties in contract management were largely linked to three major internal problems. First, NASA's planning was not realistic; it was based on a much higher level of funding than was likely to be made available. For example, NASA's program plans for fiscal years 1993 through 1997 called for up to about \$20 billion more than was likely to be provided. To adjust plans to actual budgets, NASA's projects and programs often have to be slowed down, thereby extending

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Overview

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schedules and increasing total contract costs.

Second, NASA sometimes used ineffective procedures and systems to oversee and manage contractors. The lack of uniform testing policies and the inability to adequately oversee contractors' activities contributed to problems such as those affecting the GOES-next weather satellites. Further, problems with cost reporting, property management, accounting, and information systems impaired NASA's ability to monitor contracts.

Third, some of NASA's field centers were not fully complying with governmentwide, agency, or field center contract management requirements, primarily because they were operating with ineffective guidance and oversight from NASA headquarters.

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**GAO's  
Suggestions for  
Improvement**

We have offered numerous observations and recommendations on a variety of issues related to contract management. NASA has taken, or is planning to take, steps to address these issues, including modifying plans to reflect realistic budget projections; establishing project priorities; developing overall testing policies; tracking contract

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Overview

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cost and schedule changes agencywide; improving training for procurement personnel; and correcting specific problems relating to awarding, modifying, and administering contracts.

Beyond the matters we have raised, NASA has identified the need for, and has implemented, numerous other improvement initiatives, including increasing procurement staffing and taking a variety of steps to help better identify and reward efficient and effective performance by its contractors.

The nature, scope, and variety of efforts underway to improve contract management and related areas throughout the agency illustrate the extent of the commitment by NASA management to effectively resolving the problems in these areas. Although this commitment is promising, these problems will require time and sustained effort to correct. NASA's problems in contract management and related areas were many years in the making. They will not be corrected quickly. NASA management faces a formidable challenge that will demand continuing vision, perseverance, and strong leadership.

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## Lack of Realism in Planning

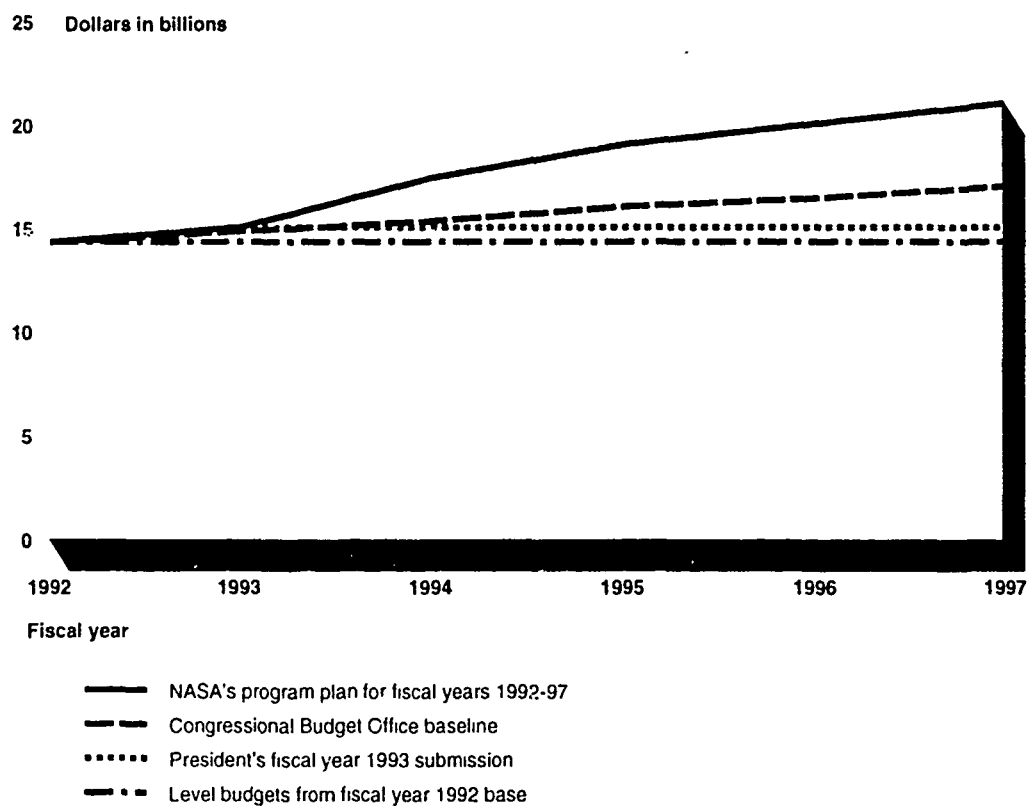
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An overarching concern that can ultimately affect NASA's ability to manage its contracts is the agency's failure to plan realistically for the budgetary resources that are likely to be available to fund its programs. Unless strategic and program plans are reasonably consistent with likely budgets, there is an increased risk of significant adverse impact on NASA's programs. When planning expectations are followed by substantially lower funding levels, NASA is forced to make program changes, including adjustments to the planned content and pace of work. Since most of NASA's work is done by contractors, such program adjustments can contribute to contract cost increases and schedule delays.

From the late 1980s through the early 1990s, NASA received large increases in its budget. However, NASA's budget for fiscal year 1993 is essentially unchanged from the previous year, and Congress has told the agency that its future budget growth may be severely limited. Unfortunately, NASA is currently overcommitted, with its program planning estimates for 1993 through 1997 up to about \$20 billion higher than the amounts likely to be appropriated under current federal budget constraints, as shown in figure 1.

Lack of Realism in Planning

Figure 1: NASA Is Pursuing More Programs Than Can Be Funded With Projected Budget Resources



(Figure notes on next page)

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**Lack of Realism in Planning**

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Notes: Preliminary NASA program planning estimates for fiscal years 1993 through 1997 total over \$90 billion

Congressional Budget Office baseline estimates include adjustments for inflation only and total \$79.5 billion for fiscal years 1993 through 1997.

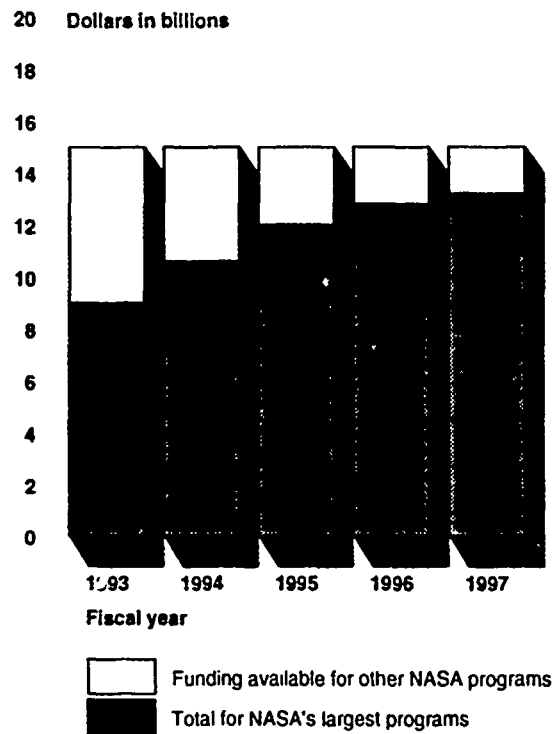
The executive branch's fiscal year 1993 budget submission projected flat funding levels of about \$15 billion annually for NASA through 1997, or a 5-year total of about \$75 billion.

Level budgets from the fiscal year 1992-enacted NASA budget of \$14.3 billion would provide total funding of \$71.5 billion for fiscal years 1993 through 1997.

In addition, NASA's largest programs, if carried out as currently planned, will consume an increasing share of NASA's future budgets. For example, if NASA received about \$15 billion for each of the next 5 years, as anticipated in the President's fiscal year 1993 budget submission, NASA's 11 largest programs in that submission would have required over 75 percent of the 5-year funding total in the President's budget. Figure 2 shows each year's increasing share of NASA's likely funding that these large programs would have required.

Lack of Realism in Planning

Figure 2: Increased Funding for NASA's Largest Programs May Reduce Budget Resources for Other Programs



Unplanned program cost increases would, of course, further exacerbate potential funding shortfalls. In addition, there are several support areas in which future funding demands may emerge, including hazardous waste cleanup and maintenance of facilities.

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**Lack of Realism in Planning**

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NASA's overcommitment, plus potential additional funding demands, mean the agency's programs may not be able to proceed as planned. However, NASA does not clearly differentiate between the programs it "must do" and the programs it "should do." For example, NASA's first agencywide strategic plan, Vision 21, failed to recognize the budget/planning mismatch and to set relative priorities should the agency be forced to stretch out or cancel programs because of lower-than-planned funding. Without a set of priorities or contingency plans, NASA will have no orderly method of choosing between or among programs should it be faced with making such decisions. Unless it starts to plan realistically, NASA will continue to perpetuate resource shortages that limit its ability to effectively manage contracts by subjecting its programs to a recurring annual cycle of cutbacks, restructurings, schedule extensions, and potential terminations.

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## Ineffective Oversight of Some Contractors

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NASA's technical oversight procedures and its cost reporting, property management, accounting, and information systems did not adequately ensure that the money paid each year to contractors and the government-owned property they held were managed effectively or accounted for accurately.

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### Technical Activities Not Properly Monitored

Weaknesses in NASA's technical oversight procedures included the lack of uniform testing policies and the inability to adequately oversee contractors' activities. In some cases, these weaknesses contributed to increased contract costs, schedule delays, and impaired performance.

Because equipment cannot be readily repaired in orbit, it must be thoroughly tested before launch. But deciding on appropriate test programs is not a simple matter. Systems are not mass-produced—most, in fact, are one of a kind. As a result, testing programs must be tailored specifically for each project, but there should be a general framework within which to plan, conduct, and interpret tests. NASA, however, has no agencywide testing policies, and project testing requirements can vary from center to center. In some cases, hardware designed for the same mission may

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**Ineffective Oversight of Some  
Contractors**

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be tested to different standards. For example, each of the centers developing space station hardware had planned to use its own testing criteria for the program. Consequently, different parts of the space station would have been tested to different tolerances for environmental extremes of heat and cold, under different durations of exposure. After a review team expressed concern, environmental testing criteria that would be applied to all space station hardware were drafted.

Contractor oversight has occasionally failed to detect critical problems at all or early enough to prevent costly schedule slippages. For example, in April 1990, NASA deployed the \$1.5 billion Hubble Space Telescope to an orbit 380 miles above the earth. Soon after, the agency discovered that the primary mirror had been manufactured in the wrong shape, severely degrading some of the telescope's scientific capabilities.

NASA's work on the next generation of weather satellites, called GOES-next, also illustrates the impact of inadequate contractor oversight. The launch of the first GOES-next satellite is at least 3 years behind schedule, and the program's estimated cost has more than doubled to over \$1.7 billion.

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**Ineffective Oversight of Some Contractors**

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Development delays have been caused, in part, by NASA's failure to initially assign enough qualified staff to oversee the contractor developing GOES-next instruments. Although NASA increased its technical involvement, much of the damage—such as the use of improper materials and other contractor errors—had already been done. Consequently, if the only remaining operational geostationary U.S. weather satellite fails anytime soon, the National Weather Service's ability to predict and track hurricanes, like Hugo and Andrew, as well as other severe weather patterns, may be degraded.

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**Adequate Contractor Cost Reporting Not Ensured**

NASA managers use contractor-provided cost data to help gauge progress on individual projects and to forecast future funding needs. On the basis of these cost reports, NASA managers may adjust program schedules, the scope of work, and funding requirements. However, contractor cost information was not always accurate, timely, or properly recorded. The contractors' reports were sometimes late, insufficiently detailed, or not received at all. Poor reporting was often due to NASA personnel not including appropriate reporting requirements in contracts.

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**Ineffective Oversight of Some  
Contractors**

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Our visits to NASA's four largest centers revealed that they did not always receive contractor-reported cost and performance data, and program analysts sometimes inappropriately adjusted contractor cost data without supporting documentation. In some cases, these actions concealed overruns, underruns, or instances where costs exceeded obligations or budget plans. Internal reviews by NASA's Comptroller personnel had also identified similar problems with centers' adjustments to contractor reports; however, effective corrective actions were not taken.

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**Government-  
Owned,  
Contractor-Held  
Property Not  
Accounted for  
Properly**

Contractors hold more than \$13 billion in property provided or acquired under NASA contracts. Various centers were not properly accounting for some of this property. For example, at two of NASA's largest centers, some contractors' annual property reports were received too late to be used to update NASA's year-end financial statements and reports. In addition, various types of errors were associated with contractor property reports and related documentation at three NASA centers.

NASA relies extensively on other agencies' surveys of contractor property systems to

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**Ineffective Oversight of Some Contractors**

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provide reasonable assurance that the contractors' property reports are reliable. However, the required survey reports were not always provided to NASA. For example, in fiscal year 1990, survey reports were not provided to one center for 13 contractors who held \$3 million in NASA property. NASA internal reviews have also documented problems with the delinquent reporting of the results of property systems surveys at three other centers.

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**Adequate Agencywide Accounting System Not Available**

NASA has a long-standing and well recognized need to develop an adequate agencywide accounting system to help improve financial oversight of contractors by providing more timely and accurate information. NASA's current costly, outdated, and nonintegrated reporting systems require multiple data entry and lengthy reconciliations. Deficiencies in these systems have resulted in improper account balances and unreliable financial reports.

NASA's efforts to develop an improved accounting system have been slow, and its planning for the project has been inadequate. Implementation of the new system is not scheduled to begin at the first center until March 1995, and there was no target date for

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**Ineffective Oversight of Some  
Contractors**

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full agencywide implementation, as of  
September 1992.

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**Data on Extent of  
Contract Changes  
Not Provided**

There were notable differences in contracts' cost and schedule growth rates at NASA's four largest centers. On the basis of a sample drawn from more than 1,800 contracts, we estimated that about one in every three contracts at NASA's four largest centers experienced cost increases, and more than two of every five contracts experienced schedule changes. Contract costs were increasing at an estimated annual rate ranging from less than half of one percent at one center to over 6.5 percent at another—a 16-fold rate difference. The estimated average rate of schedule delay was almost 9 percent annually, ranging from 4.5 percent at one center to 16 percent at another.

NASA did not know the extent of cost increases and time extensions because its procurement information system did not routinely provide this data. Thus, NASA procurement managers did not have useful information for targeting specific centers and contracts or types of contracts for further review to help determine the extent to which cost increases or schedule changes

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**Ineffective Oversight of Some  
Contractors**

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were related to contract management  
problems.

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## Some Centers Not Fully Complying With Procurement Requirements

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NASA field centers did not always fully comply with governmentwide, agency, or center requirements when awarding and modifying contracts. For example, in some instances at one or more of NASA's four largest centers, (1) proposed contract changes were not adequately evaluated by technical personnel, (2) negotiations of contract changes were not completed in a timely manner, (3) unauthorized personnel directed contractors to perform additional work, and (4) sole-source procurements were not properly justified. The first two problems were the most prevalent, while the last two problems existed to a much lesser extent. Some centers were also frequently not complying with requirements or following good management practices in the delegation of contract administration functions.

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### Proposed Contract Changes Not Adequately Evaluated

Ensuring the reasonableness of contract changes requires NASA personnel to technically evaluate contractors' proposals. Such evaluations are performed by the contracting officers' technical representatives, who are engineers or scientists from the program office being supported by the contract. At three of NASA's four largest centers, some of the required

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**Some Centers Not Fully Complying  
With Procurement Requirements**

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four largest centers, some of the required evaluations were not done or were done poorly. In many instances, technical representatives did not evaluate all the necessary technical elements of the contractors' change proposals or explain how they had reached their conclusions. Without adequate technical evaluations, procurement personnel lacked important information for thoroughly evaluating contractors' proposals and obtaining the best prices.

NASA's management reviews have also frequently identified problems with the quality of technical evaluations. For example, inadequate technical evaluations have been cited as a continuing problem at one center since the mid-1980s. In response, center management developed a training course addressing the preparation of technical evaluations. However, the course had been slowly implemented, and none of the technical representatives we spoke with had attended it.

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**Contract Changes  
Not Negotiated in  
a Timely Manner**

Unpriced contract changes allow a contractor to start work and incur costs before NASA and the contractor agree on terms and conditions, including price. Until

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**Some Centers Not Fully Complying  
With Procurement Requirements**

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firm prices are negotiated, contractors have limited incentive to control costs. If work is completed before the change has been priced, the government will have lost the opportunity to review the contractor's proposed cost and to identify opportunities to do the work more efficiently.

Despite the advantages of pricing contract changes in a timely manner, NASA frequently did not negotiate contract changes within the 180-day period generally used as a guideline for completing such negotiations. For example, in July 1991, the four largest centers reported that there were 234 changes valued at approximately \$2.2 billion outstanding for more than 180 days.

Because they were concerned about unpriced changes, NASA headquarters procurement officials began tracking the time required by the centers to negotiate such changes and comparing their performances. Since then, centers have shown progress in reducing the number and value of unpriced contract changes. However, the monitoring is continuing because as of August 31, 1992, NASA's four largest centers still had 175 unpriced contract changes, valued at about \$1.9 billion, that were over 6 months old.

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**Some Centers Not Fully Complying  
With Procurement Requirements**

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Moreover, almost three-quarters of this dollar amount was related to 56 unpriced changes over a year old.

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**Unauthorized  
Personnel  
Directed  
Contractors'  
Work**

Only the contracting officer can authorize contract changes. However, in four instances at one of NASA's four largest centers, other personnel directed contractors to perform additional work. For example, after a contractor had informed the technical representative that additional materials were needed, the technical representative authorized the use of the materials without consulting the contracting officer. This contract's schedule was also extended by about 7 months due to another improperly authorized change.

In 1989, a NASA management review noted many instances in which the actions of technical representatives at this same center seemed to be eroding the authority of contracting officers. In response, center management prepared guidelines for technical representatives and developed a related training course. However, most of the technical representatives we contacted at the center did not have the guidelines, and the training course was voluntary and had been offered only a few times.

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**Some Centers Not Fully Complying  
With Procurement Requirements**

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**Sole-Source  
Procurements  
Not Properly  
Justified**

NASA personnel at two centers did not follow the requirements of the Competition in Contracting Act (CICA) of 1984 in justifying sole-source procurements. Under CICA, contracting officers must promote and provide for full and open competition when soliciting offers and awarding contracts. Contracting officers may proceed with procurements without full and open competition only after proper justification and approval. When contracts are not awarded competitively, the government may have less assurance that it is paying fair and reasonable prices for goods and services, and it may lose the opportunity to obtain lower prices and increase the efficiency of its programs.

In late 1988, we reported that a contracting officer had not properly followed the requirements of CICA in a noncompetitive procurement of almost \$3 billion worth of parts and fabrication services for the space shuttle's external tanks. Three years later, we reported that personnel at another center had improperly extended one contract and had noncompetitively added new work to another without justifying them as sole-source procurements.

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**Some Centers Not Fully Complying  
With Procurement Requirements**

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**Contract  
Administration  
Functions Not  
Properly  
Delegated**

NASA procurement officials often rely on other government agencies to perform many contract administration functions. Currently, NASA pays over \$40 million a year for such services. However, there were widespread and significant deficiencies in some centers' management of delegated contract administration activities that could seriously hamper contractor oversight. For example, the four centers we visited frequently did not make delegations in a timely manner and did not routinely inform the delegates about major contract changes, including modifications that extended the life of the contract. In addition, some NASA contracting officers were unaware that contract administration activities had been delegated on contracts for which they were responsible.

Contract administration planning at the four centers did not comply with NASA's own guidelines. In most cases we reviewed, NASA personnel did not hold required conferences with the delegates to plan the nature and extent of contract administration functions. In one case, a conference was not held on a contract valued at over \$500 million because the contracting officer incorrectly believed that one was not required since the contract was for support services. In

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**Some Centers Not Fully Complying  
With Procurement Requirements**

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contrast, all of the required contract administration and quality assurance planning conferences were held on the three major work package contracts for Space Station Freedom.

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**Factors  
Contributing to  
Compliance  
Problems**

The NASA centers we reviewed failed to comply with requirements or to effectively correct contract management problems for a number of reasons. First, NASA operates largely in a decentralized fashion under which its field centers have considerable operating latitude. For this approach to be effective, headquarters must establish clear expectations and carefully monitor the performance of centers. Ineffective guidance and oversight have resulted in substandard contract management practices at some field centers.

Other factors contributing to compliance problems included (1) a primary emphasis on awarding contracts to the detriment of oversight activities occurring after contract award; (2) a lack of minimum agencywide standards for training personnel who plan, monitor, and evaluate contractors' technical performance; (3) corrective actions for contract management problems that were not effectively implemented; (4) center

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**Some Centers Not Fully Complying  
With Procurement Requirements**

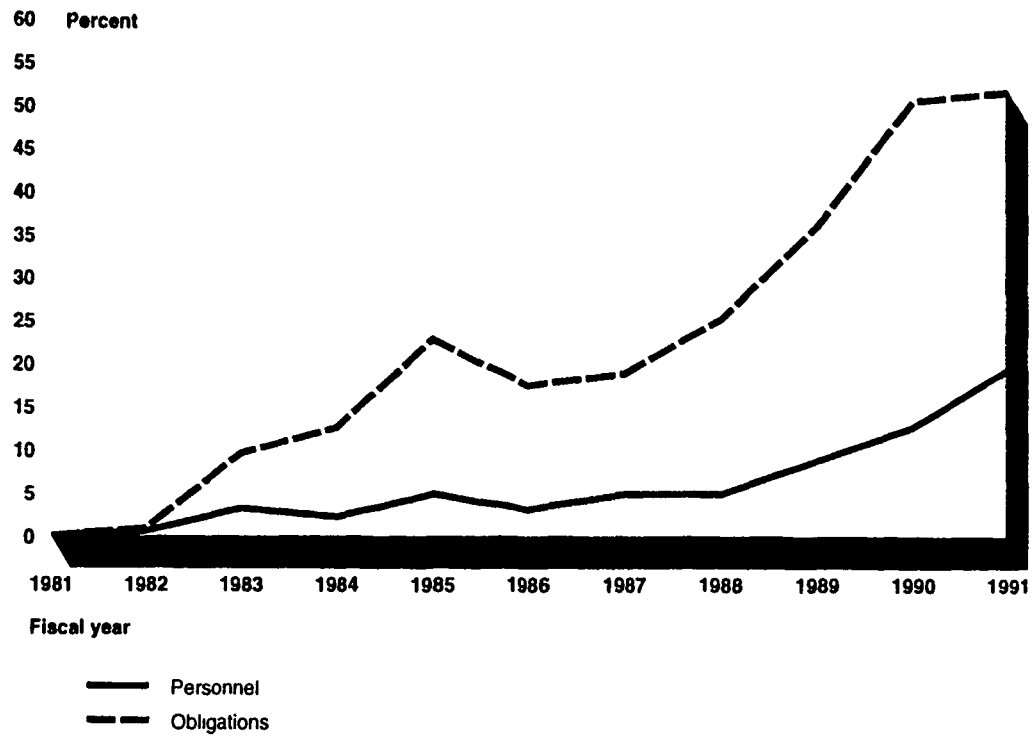
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personnel who were not familiar with requirements or did not consider them to be critical; and (5) procurement management surveys that had limited effectiveness because they generally did not assess the causes of problems identified.

In addition, NASA officials believe that the erosion of the agency's contract management capabilities is also partially due to a shortage of procurement personnel. In the last decade, the value of NASA's procurement obligations increased about 51 percent, from \$8.4 billion to \$12.7 billion in fiscal year 1990 dollars. Also, the number of contracts valued at over \$1 million more than doubled, and the percentage of procurement dollars NASA awarded competitively grew steadily from 45 percent to 82 percent. Generally, the award and administration of larger or competitive contracts require more time and effort than for smaller or noncompetitive ones. Despite the increased value and complexity of contracts, the number of procurement personnel awarding and administering contracts grew only about 19 percent—from 907 to 1,082. The relative growth in procurement personnel and procurement obligations is shown in figure 3.

Some Centers Not Fully Complying  
With Procurement Requirements

Figure 3: Percentage Increases in NASA Procurement Personnel and Procurement Obligations in Fiscal Year 1990 Constant Dollars



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## NASA's Efforts to Improve Contract Management and Related Areas

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NASA has been working to improve many areas of contract management. Its headquarters' staff have become increasingly active over the last few years—proposing, implementing, or completing numerous initiatives. Some of these are related to our recommendations on the need for improved oversight of contractors and procurement centers. For example, we recommended that the NASA Administrator

- develop testing policies that define NASA's testing goals and establish agencywide minimum standards for space systems' test programs;
- direct contracting officers to enforce requirements that their technical representatives perform and document adequate evaluations;
- establish and enforce minimum training requirements for contracting officers' technical representatives that emphasize their roles and responsibilities, scope of authority, and relationship to other members of the procurement management team;
- ensure that procurement centers develop and implement adequate procedures for complying with requirements for delegating

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**NASA's Efforts to Improve Contract  
Management and Related Areas**

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contract administration functions; and

- improve the reliability of contractors' cost data and the controls over government property held by contractors.

Consistent with some of these and other recommendations and observations we have made, NASA created an organization to focus on contract management within its headquarters' procurement office and has been working on known contract management issues, such as improved training for members of the procurement team and the timely negotiation of contract changes. In working on this last matter, one NASA center recently evaluated the causes of delays in its pricing of contract changes and recommended ways to streamline the process.

NASA also modified its procurement information system to enable cost and time changes on its contracts to be summarized routinely and comprehensively, and the agency has been using this information to improve the targeting of its procurement management oversight activities. Due to rising concerns about the management of delegated activities, NASA has been improving oversight and coordination of delegated

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**NASA's Efforts to Improve Contract  
Management and Related Areas**

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contract administration services. For example, it developed a new procedure requiring that procurement supervisors ensure appropriate contract administration planning conferences are held.

NASA is also addressing other issues we raised that may ultimately affect the quality of its contract management. For example, the agency is developing overall testing policies and related procedural guidelines. It has also begun to deal with the lack of realism in planning—that is, to bring the planning of the content and pace of its programs reasonably in line with likely future budgets. NASA has been reviewing the costs of all major programs, and it plans to make appropriate adjustments to ensure a balanced overall space and aerorautics program within budget realities. Senior NASA managers have also agreed to develop priorities in conjunction with the agency's fiscal year 1994 budget request.

Apart from our work on contract management and related areas, NASA—based on the results of assessments by its headquarters' staff and others—has identified the need for or implemented other contract management improvements related to additional procurement staff; a special

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**NASA's Efforts to Improve Contract  
Management and Related Areas**

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focus for dealing with nonproductive contractor employees; the use, management, and structure of award fees; the purchasing practices of major contractors; and subcontract pricing.

Other procurement improvement initiatives underway would focus on streamlining the contracting process for procurements ranging from \$25,000 to \$500,000; promote better use of certain types of contracts; hold contractors more accountable for their work; systematically measure contractors' performance; and consider companies' past performance when awarding contracts.

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## Conclusions and Action Needed

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NASA's contract management weaknesses were many years in the making and will require time and sustained effort to correct effectively. A vital step related to that effort is to do agency planning that clearly states NASA's vision for the future and the steps to realize that future in an affordable manner. Failure to deal aggressively with the mismatch between program plans and likely budgets will impair NASA's ability to effectively manage its contracts and will dampen the effects of the contract management improvements that may result from actions currently underway or recently completed.

The commitment of NASA management to correcting the plans/budgets mismatch and resolving the agency's contract management difficulties increases the likelihood of, but does not guarantee, eventual success. In principle, we support NASA's initiatives. Based on the work we have done over the last 2 years, efforts such as those currently underway throughout the agency are necessary to the thorough consideration of actions that could, over time, accomplish effective change. We have seen numerous corrective actions fail time and time again to effectively correct existing problems. It is time for bolder action.

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**Conclusions and Action Needed**

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A potential obstacle that may prevent or slow these efforts is the agency's organizational culture.<sup>1</sup> For many years, NASA's culture has been characterized by a "can-do" attitude and a strong esprit-de-corps, and it has been a major factor contributing to the agency's hard-earned reputation for technical brilliance and monumental achievements. However, these positive aspects of NASA's culture are accompanied by negative ones, including strong, center-based loyalty and resistance to change.

Eliminating resistance to change may be the more formidable challenge to the agency's improvement efforts. For example, until recently, NASA traditionally accepted all of the cost risk under its research and development contracts. When NASA headquarters procurement officials began advocating that cost risk be shared with contractors, sharp differences surfaced within NASA on how best to apportion it, with some NASA field centers resisting any change to the traditional approach.

NASA management faces the daunting task of changing fervent views held for many years

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<sup>1</sup>"Organizational culture" refers to the underlying assumptions, beliefs, values, attitudes, and expectations shared by an organization's members.

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**Conclusions and Action Needed**

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and injecting into NASA's culture a more open-minded approach to evaluating the old ways of doing business while simultaneously preserving the culture's positive features. To effectively do so will take time. The NASA Administrator has noted that changing an organization's basic way of doing business is a long and difficult process—a process NASA is just beginning.

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## Related GAO Products

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Financial Management: NASA's Financial Reports Are Based on Unreliable Data  
(GAO/AFMD-93-3, Oct. 29, 1992).

NASA: Large Programs May Consume Increasing Share of Limited Future Budgets  
(GAO/NSIAD-92-278, Sept. 4, 1992).

NASA Procurement: Opportunities to Improve Contract Management (GAO/T-NSIAD-92-33, May 7, 1992).

Space Station: Contract Oversight and Performance Provisions for Major Work Packages (GAO/NSIAD-92-171BR, Apr. 14, 1992).

NASA Procurement: Improving the Management of Delegated Contract Functions (GAO/NSIAD-92-75, Mar. 27, 1992).

NASA Procurement: Approach to Sharing Risk Under Certain Research and Development Contracts Is Starting to Change  
(GAO/T-NSIAD-92-12, Mar. 18, 1992).

NASA Budget: Potential Shortfalls in Funding NASA's 5-Year Plan (GAO/T-NSIAD-92-18, Mar. 17, 1992).

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**Related GAO Products**

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NASA Procurement: Agencywide Action Needed to Improve Management of Contract Modifications (GAO/NSIAD-92-87, Mar. 2, 1992).

NASA Procurement: Management Oversight of Contract Cost and Time Changes Could Be Enhanced (GAO/NSIAD-91-259, Sept. 30, 1991).

Space Project Testing: Uniform Policies and Added Controls Would Strengthen Testing Activities (GAO/NSIAD-91-248, Sept. 16, 1991).

Financial Management: Actions Needed to Ensure Effective Implementation of NASA's Accounting System (GAO/AFMD-91-74, Aug. 21, 1991).

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## High-Risk Series

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### Lending and Insuring Issues

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Guaranteed Student Loans (GAO/HR-93-2).

Bank Insurance Fund (GAO/HR-93-3).

Resolution Trust Corporation (GAO/HR-93-4).

Pension Benefit Guaranty Corporation  
(GAO/HR-93-5).

Medicare Claims (GAO/HR-93-6).

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### Contracting Issues

Defense Weapons Systems Acquisition  
(GAO/HR-93-7).

Defense Contract Pricing (GAO/HR-93-8).

Department of Energy Contract Management  
(GAO/HR-93-9).

Superfund Program Management  
(GAO/HR-93-10).

NASA Contract Management (GAO/HR-93-11).

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High-Risk Series

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Accountability  
Issues

Defense Inventory Management  
(GAO/HR-93-12).

Internal Revenue Service Receivables  
(GAO/HR-93-13).

Managing the Customs Service (GAO/HR-93-14).

Management of Overseas Real Property  
(GAO/HR-93-15).

Federal Transit Administration Grant  
Management (GAO/HR-93-16).

Asset Forfeiture Programs (GAO/HR-93-17).