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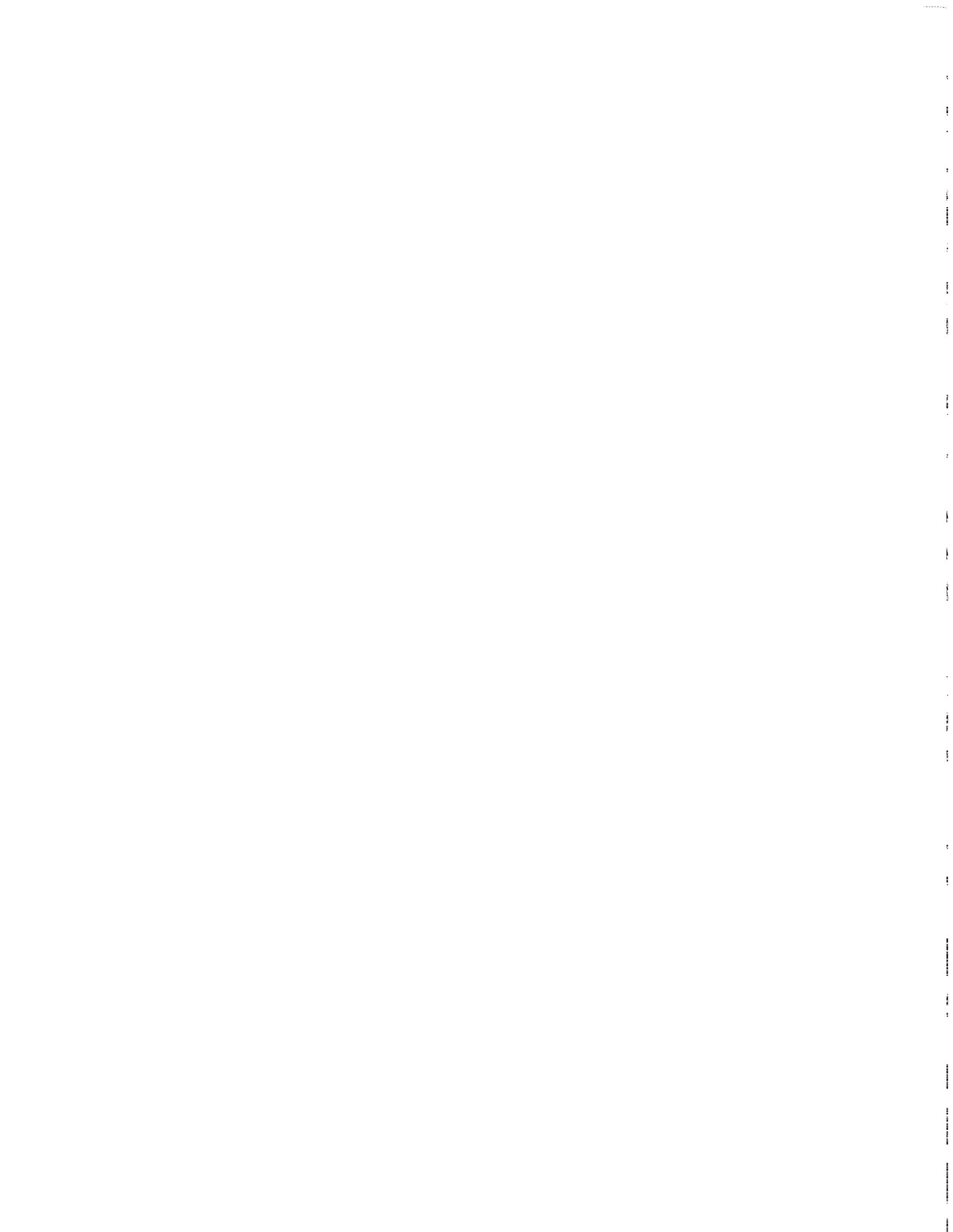
NASA PROPERTY

Poor Lending Practices and Controls at the Jet Propulsion Laboratory



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National Security and
International Affairs Division

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The Honorable John Glenn
Chairman, Committee on Governmental Affairs
United States Senate

The Honorable Carl Levin
Chairman, Subcommittee on Oversight of Government
Management
Committee on Governmental Affairs
United States Senate

As requested, we are continuing to review the relationship between the National Aeronautics and Space Administration (NASA) and the California Institute of Technology (Caltech) for managing and performing research and development at the Jet Propulsion Laboratory (JPL). This is our second report on this issue;¹ it discusses property management weaknesses at JPL, primarily for equipment loaned to JPL employees and equipment provided to Caltech. As agreed with your offices, we plan to report later on selected provisions of the new contract between NASA and Caltech that was approved on January 10, 1994, for the operation of JPL for a 5-year period beginning September 20, 1993.

Results in Brief

NASA's equipment at JPL is poorly controlled. There are major weaknesses in the policies, procedures, and practices for lending NASA equipment to JPL employees; in the identification and control of NASA equipment at Caltech; and in JPL's overall property management system. Consequently, some equipment is purchased unnecessarily, underused, lost, or stolen.

NASA policy provides that equipment may be loaned to employees only on a temporary basis to perform official duties, and that no equipment can be bought or held solely to lend. JPL policy also limits the loaning of equipment, but its current practices largely undermine these policies. Equipment loans at JPL increased by about 40 percent in the past 2 years; by September 1993, over 4,000 items, acquired at a cost of about \$7.6 million, were on loan to JPL employees.

About 96 percent of the borrowed items were computer-related and included both state-of-the-art and older systems, some of which were

¹NASA Procurement: Proposed Changes to the Jet Propulsion Laboratory Contract (GAO/NSIAD-93-178, July 15, 1993).

bought or retained to lend to employees. The remaining items included communications and recording equipment, such as televisions, VCRs, cameras, camcorders, cellular telephones, and facsimile machines, as well as scientific instrumentation, such as oscilloscopes and spectrometers. Most of the borrowed equipment was for home use and many borrowers were keeping it for prolonged periods—2 years or more was not unusual.

JPL's property management system was approved by NASA in 1989. However, recent reviews of the system by NASA headquarters and the NASA Inspector General concluded that oversight and accountability of equipment at JPL is inadequate. As a result of the last two inventories, over \$5 million in lost or stolen NASA equipment has been written off JPL's records. NASA is currently planning to reassess the JPL property system and has directed JPL to perform a complete inventory in 1994.

The reassessment and complete inventory will provide opportunities for NASA to identify and correct problems in the design and operation of JPL's property control system, including the inability to accurately identify and control NASA equipment purchased directly by Caltech for use on JPL work orders. JPL's property system reported NASA equipment items originally valued at \$2.6 million at Caltech; Caltech's system listed \$6.6 million in NASA equipment. The two systems are different in scope, and they cannot be routinely compared to help ensure the accuracy of JPL's property records. However, Caltech and JPL officials believe that none of the equipment in Caltech's system is currently recorded in JPL's system. No reconciliation of the records in the two systems has been done, and the actual differences between them is unknown.

Background

JPL operates as a federally funded research and development center, the principal NASA center for solar system exploration, and an operating division of Caltech. The facility is government-owned, staffed by about 6,400 personnel, and operated by Caltech. Program activities and the operation of the facility cost about \$1 billion annually.

A staff of 25 people in NASA's Management Office at JPL oversees the contract. In addition, representatives from NASA's Office of the Inspector General and the Defense Contract Audit Agency are located at JPL to help monitor contractor performance. The NASA Management Office has assigned one person the responsibility for reviewing and approving JPL's property control system and its management practices, procedures, and guidelines. The Management Office is also required to prepare a written

property survey plan for evaluating JPL's property system and documenting the results of such evaluations. If the evaluation identifies weaknesses in the property system, JPL is required to take corrective action.

JPL is responsible for controlling the acquisition, use, and disposal of equipment used to perform NASA-sponsored work. The Federal Acquisition Regulation (FAR) requires government contractors to establish property control systems capable of creating and maintaining the government's official property records. According to the FAR, contractors' property control systems must

- be subject to internal control standards;
- identify government property and provide a complete, current, and auditable record of all transactions; and
- be able to locate any item of government property within a reasonable period of time.

The NASA FAR Supplement and NASA's Equipment Management Manual implement the FAR and place additional conditions on equipment acquisition, use, and disposition. NASA's and JPL's equipment management policies provide that government equipment may be loaned only on a temporary basis to conduct NASA missions or other government purposes. NASA's policy also states that "Equipment will not be held or acquired by the installation solely for the purpose of loans." The policy is meant to limit the amount and value of equipment placed on loan.

JPL's policies and procedures for managing and using government property are subject to NASA approval. JPL's property loan policy allows employees to borrow government property for official, off-site temporary use when determined necessary to support work on task orders, contracts, or other formal agreements. JPL's property management instructions require equipment loan requests be approved by the employee's section manager, who must decide if the loan is justified and reasonable for the purpose of performing authorized work. All loan requests should include a description of the equipment and the reason for borrowing it. Employees are allowed to keep equipment for up to 1 year before they must either return it or obtain an extension. After 2 years, the equipment must be brought back to JPL for inspection before the loan may be extended again. There is no limit on the number of extensions a loan may receive.

Neither NASA's nor JPL's policies specifically mention lending equipment for employees' at-home use. Both policies generally limit equipment loans to

temporary use under distinctly different definitions of "temporary"—NASA's for 30 days up to a maximum of 1 year; JPL's for a year, but with annual renewals indefinitely.

Each year, as required by the Federal Managers' Financial Integrity Act, the NASA Administrator reports to the President and Congress on the results of an agencywide assessment of internal management and accounting controls. The latest annual report, dated December 10, 1993, addresses property-related concerns throughout the agency, but not those discussed in this report.

Employee Equipment Loan Policy Being Violated

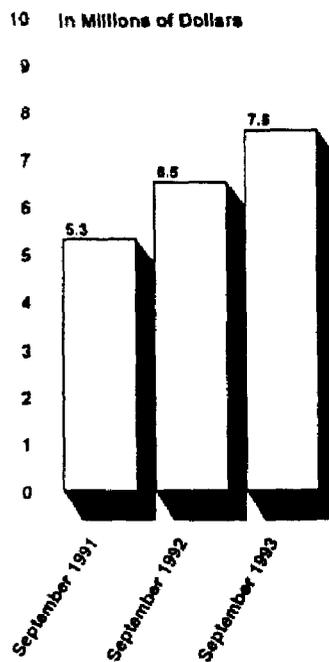
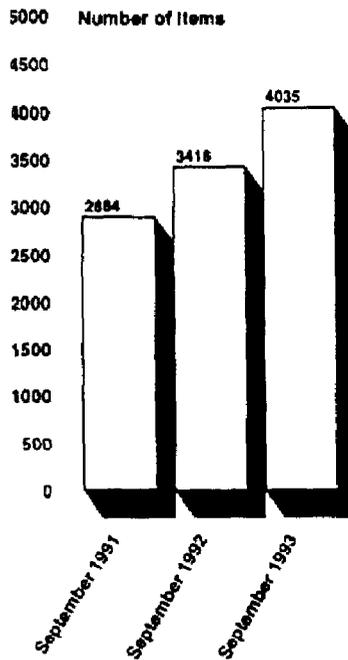
The practice of loaning equipment, principally computer systems, to JPL employees for at-home use is widespread and increasing. As of September 1993, over 4,000 equipment items, valued at their acquisition cost of about \$7.6 million, were on loan to JPL employees—a 40-percent increase in 2 years. New computer equipment was acquired and older computer equipment was retained for the sole purpose of loaning it to employees. Both NASA and JPL policies require that loans be made only in support of NASA approved work; however, equipment loan justifications were not always clear and specific in identifying the mission requirements to be supported by the equipment, and some loans were not properly authorized.

Lending equipment for employees' at-home use is also occurring at other NASA centers. Some of the equipment appears to be for long-term, rather than temporary use, and some of it may have been purchased specifically to lend.

Equipment Loans to JPL Employees Are Increasing

JPL's equipment loan practices have resulted in a large increase in the number and value of equipment items on loan to employees in the past few years. In September 1991, JPL records showed that there were 2,884 items on loan, valued at their acquisition cost of \$5.3 million. By September 1993, JPL records showed that there were 4,035 items on loan, valued at their acquisition cost of \$7.6 million. Figure 1 shows the number and value of equipment items on loan during this period.

Figure 1: Number and Value of Equipment Items on Loan to JPL Employees, September 1991-93



Source: NASA/JPL.

Of the 4,035 NASA equipment items on loan to JPL employees as of September 1993, the major portion (96 percent) was computer equipment—ranging from older, obsolete personal computers to new, state-of-the-art computers. Other computer equipment on loan included about 150 laser printers (valued at \$321,000), as well as color monitors, modems, and, according to JPL officials, about 250 laptop computers that are also used by employees when traveling. About 170 pieces of other equipment were also on loan, including communications and recording equipment, such as cellular telephones, facsimile machines, telephone answering machines, dictation units, calculators, typewriters, VCRs, televisions, cameras, projectors, and camcorders; and instrumentation equipment, such as oscilloscopes and spectrometers. JPL officials acknowledged that almost all borrowed equipment is located at employees' homes, although some items—especially the noncomputer equipment—may be at other off-site work locations.

Many JPL personnel believe there are important benefits associated with the loans. For example, according to a recent survey conducted by JPL's management, JPL employees provide a large amount of additional unpaid work hours by using borrowed equipment at home. JPL's survey asked about official use of borrowed equipment not personal use. Most survey respondents indicated that they used the equipment to work additional hours. Almost 75 percent of them reported that the completion of their work would have been delayed without the equipment. The most frequently reported uses were for preparing documents, reports, and spreadsheets. JPL management officials believe that the value of the additional unpaid work exceeds the cost of the borrowed equipment.

In our discussions of equipment loans with JPL staff, one section manager noted that the current lending system relies on trust and another believed that many employees use the loaned equipment for personal activities. In judging the costs and benefits of equipping two work sites—one at the office and one at home—managers should consider the best use of the equipment, among other things. Within a month after the recent survey on uses of borrowed equipment was completed, JPL employees returned 175 equipment items valued at \$266,000.

Equipment Is Being Acquired to Lend

JPL is buying equipment solely for the purpose of lending it to employees. Almost half of the equipment on loan as of September 1993 that was acquired since January 1991 was loaned to individual employees within a month after delivery to JPL. Of the total equipment on loan as of

September 1993, 1,291 items had been purchased since January 1, 1991, at a cost of about \$2.6 million. Table 1 shows how soon after purchase that equipment was loaned to employees.

Table 1: Time From Acquisition to Loan for Equipment Acquired Between January 1991 and September 1993

Calendar days between acquisition and loan	Number of items	Value	
		Amount	Percent
Less than 31	614	\$1,209,300	47.1
31 to 90	177	366,551	14.3
91 to 180	97	224,238	8.7
181 to 365	173	322,764	12.6
More than 365	230	442,944	17.3
Total	1,291	\$2,565,797	100.0

Equipment on loan is in addition to equipment provided to employees at their official work sites. According to some section managers and employees, equipment is retained by employees on a long-term basis, instead of for short-term, temporary purposes. Authorizations are routinely renewed each year, and the equipment remains on loan until the employee leaves or is reassigned, or until the equipment is obsolete and is replaced. One employee with loaned equipment described the annual loan renewal process as "automatic," resulting in equipment being loaned on essentially a permanent basis. Loan records show that many borrowers keep equipment for prolonged periods of time—2 years or more was not unusual.

We reviewed the purchase order justifications for 10 equipment items that were at employees' homes. The justifications for eight of the items did not mention at-home use. The justification for the other two items, which were covered by the same purchase order, did refer to at-home use of the equipment. However, the justification stated that the equipment would be used at both the office and at home. In fact, both items were being used solely at home.

Equipment Is Being Retained to Lend

JPL is required by governmentwide, NASA, and its own instructions to maintain an effective program for disposal of equipment that is no longer required. Such equipment should be declared excess and made available for use by other JPL organizations and then by other NASA facilities. If no longer needed within NASA, standard federal government procedures for surplus equipment require that it be made available to other

government agencies, then offered to eligible recipients such as state agencies and local educational institutions. If no need is found to this point, the surplus equipment can then be sold to the public.

JPL is holding equipment for the sole purpose of loaning it to employees. Typically, this is older equipment that has been replaced at official work sites. The equipment is loaned to section employees rather than making it available for use elsewhere at JPL or by another NASA facility. Some employees indicated that this equipment was not being effectively used to support NASA work.

About 45 percent of the equipment on loan to employees as of September 1993, was over 5 years old. Table 2 summarizes the age of equipment on loan as of September 1993.

Table 2: Age of Equipment on Loan as of September 17, 1993

Age of equipment	Number of Items	Value	
		Amount	Percent
Under a year	489	\$1,004,189	13.2
1 year to 3 years	858	1,670,262	22.0
3 years to 5 years	799	1,502,098	19.7
5 years to 8 years	1,472	2,448,352	32.2
More than 8 years	417	979,981	12.9
Total	4,035	\$7,604,882	100.0

According to JPL property officials, the older equipment was made available for employee loans after being replaced by new equipment, primarily because it was not fully compatible with the computer software currently used at JPL. However, JPL management felt that the employees could still effectively use the equipment to support JPL work during off-duty hours. Consequently, it was made available for JPL employees to borrow rather than being declared excess and put into the property reutilization and disposal system.

By loaning older computer equipment to employees, JPL section managers are precluding its potential use elsewhere within JPL or NASA. If the equipment were declared excess, other sections at JPL and other NASA facilities might be able to use it instead of purchasing new equipment. However, according to a JPL property official, there is no incentive for a manager to declare equipment excess if employees wish to take it home on loan. Since the equipment was initially purchased with funds allocated to their sections, some managers may be reluctant to release it and would

rather retain it by simply lending it to an employee assigned to their sections.

The following examples, taken from discussions with employees who borrowed equipment to use at home, illustrate how the equipment does not always effectively support authorized work:

- A project scientist has three lap-top computers valued in excess of \$18,000 that he uses at home and when traveling. However, he does not use the oldest of the three computers and keeps it only as a back-up.
- A financial analyst stated that she uses her borrowed computer, monitor, and printer only for basic word processing, on an infrequent basis. She noted there was no existing work requirement for this computer system.
- Another financial analyst has a computer system valued in excess of \$3,000 and uses it only on a limited basis because the system has no modem for electronically communicating directly with JPL.
- Another project scientist has a computer system valued at over \$5,000 that he does not need on a regular basis.

Loan Requests Are Nonspecific and Improperly Authorized

Justifications for employee equipment loans were often worded very generally. Although required by NASA's and JPL's policies, the justifications did not always provide specific information about how the equipment would be used or what temporary need would be met, and they did not identify specific JPL projects or mission requirements that would be supported. Requiring specific justifications is especially important in view of the long-term nature of many of the loans, as previously discussed.

The following statements are examples of those found in equipment loan justifications:

- "Property to be used at night and on weekends for JPL work."
- "To work on job-related tasks at home/travel."
- "To work on job-related assignments."
- "To be used at home to work during off hours."
- "To be used at home on financial information system tasks."
- "For use at night and on weekends in conducting JPL business."
- "... to allow flexibility in my work schedule to meet work assignments in a timely manner."

In addition, loan authorizations were not always properly approved. Employee equipment loan authorizations were also being approved by

staff other than the section manager, in violation of JPL's policy. Some were approved by employees who did not have approval authority. For example, in one case, an employee approved his supervisor's equipment loan. In several other cases, an administrative assistant was approving other employees' loans. One group supervisor and some section managers were also approving their own equipment loans.

Equipment Being Borrowed by Employees at Other NASA Centers

The scope of our detailed review did not extend to other NASA centers. However, we discussed employee equipment loan practices with equipment managers at two other NASA centers. Based on those discussions, it appears that a significant amount of lending is occurring at other NASA facilities. For example, one center had over 1,000 items valued at \$1.9 million on loan to employees. In addition, these loans appear to be for long-term use at home, and some of the equipment may have been purchased specifically to lend to employees.

JPL Property Controls Inadequate and Extent of NASA Equipment at Caltech Unknown

JPL's property system does not meet federal regulations and until its flaws are corrected, millions of dollars of NASA equipment will remain unaccounted for, unavailable for others' use, and more vulnerable than necessary to loss or theft. Among other things, JPL's property system cannot effectively identify, track, and account for NASA-owned equipment purchased directly by Caltech for use on JPL work orders.

Property System Survey and Complete Inventory Being Required

The NASA Management Office approved JPL's property system in 1989. However, after their recent reviews of JPL's property system, both the NASA Inspector General's office at JPL and NASA headquarters concluded that the NASA Management Office has not maintained adequate oversight and accountability of equipment. As a result of a NASA Inspector General recommendation, the NASA Management Office has prepared a property administration plan for assessing JPL's property system and is in the process of identifying areas for review.

JPL has been experiencing significant equipment losses. As a result of a 1990 inventory, JPL wrote off \$1.7 million in equipment that was lost or stolen. In 1992, an additional \$3.4 million was written off, including 60 items on loan to employees valued at about \$95,000. None of the property written off in either year had to be reimbursed by JPL or its employees. Because of the significant deficiencies found during the 1992

inventory, the NASA Management Office has requested JPL to do a complete wall-to-wall inventory during 1994.

The upcoming property system review and inventory will provide NASA an opportunity to thoroughly examine all aspects of JPL's system, including the extent to which it fails to routinely identify equipment that is excess to JPL's needs. In this regard, JPL records showed that, as of November 9, 1993, there were 1,952 equipment items valued at \$16.8 million at an off-site warehouse. Some of the items were obsolete computer-related equipment originally purchased in the late 1970s and early 1980s that have little likelihood of further use.

JPL Equipment Inventory Records Do Not Fully Account for Equipment Provided to Caltech

The value of NASA equipment at Caltech cannot be accurately determined because of weaknesses in the reporting of equipment purchased directly by Caltech for use on JPL work orders.

JPL has the responsibility to track all equipment authorized for purchase with NASA funds, including equipment that is

- acquired by Caltech for use on JPL-authorized work orders,
- acquired by JPL and moved to the Caltech campus for use on work orders or joint tasks with Caltech personnel, and
- acquired by JPL and loaned to Caltech for use on non-NASA work when it is not needed at JPL.

The NASA contract with Caltech requires that this equipment be entered in and controlled through the JPL equipment inventory system. Instead, NASA equipment purchased directly by Caltech for use on JPL work orders is typically recorded only in Caltech's equipment inventory system. While procedures call for Caltech personnel to notify JPL that the equipment has been received, such notifications almost never occur, according to Caltech officials.

JPL property records showed that there were over 400 computers and other equipment items valued in excess of \$2.6 million at Caltech as of September 1993. However, Caltech records indicated that it had over \$6.6 million in equipment. JPL and Caltech officials believe that none of this equipment is currently recorded in JPL's property system. However, no reconciliation of the systems' records has been done.

JPL's property control system cannot distinguish between the three methods of providing equipment to Caltech—work orders, joint tasks, and temporary loans when not needed at JPL. The system was not designed to record the work order numbers under which equipment is acquired, and JPL has no effective way to identify the equipment purchased directly by Caltech under JPL work orders or to track it after work orders expire to ensure its proper reuse or disposition.

There are no clear understanding or written procedures for Caltech personnel to follow in notifying JPL when they directly receive equipment under a JPL work order. A Caltech property tag is placed on the equipment, but no NASA property tag is attached unless Caltech notifies JPL of its delivery to Caltech. According to Caltech officials responsible for managing and reporting on JPL property, they were not aware prior to January 1993 that they needed to notify JPL when Caltech purchased equipment under a JPL work order. Even after that date, they were often unsure whom to notify at JPL; usually, no one was notified. Caltech officials attributed this confusion to (1) periodic changes in JPL personnel and (2) JPL not effectively coordinating with Caltech or providing written or other clear instructions on how to handle such matters.

Similarly, a JPL contract management office representative told us he does not always notify JPL's property control office of changes in the status of equipment even when notified by Caltech. Due to the lack of any clear procedures, he was also unsure about what approvals were required when Caltech requested permission to transfer equipment between work orders.

As a result of our review, JPL and Caltech officials created a process action team in January 1994 to determine ways to improve the transfer and accounting process for JPL's NASA-owned equipment at Caltech.

Conclusions and Recommendations

There can be value in making equipment temporarily available to some employees to work at home when workloads and delivery schedules cannot be reasonably accommodated within the normal workweek and when being at the office outside of normal duty hours is not a realistic option. However, the frequency, duration, and growth in JPL equipment loans have reached a point where a comprehensive review of current policies, procedures, and practices is required, particularly since JPL's system results in equipment being bought or retained to lend for long-term, at-home use.

The scope of NASA's review of the equipment loan policy, procedures, and practices needs to be agencywide, in light of indications that a large amount of equipment is being borrowed for home use by employees at other NASA centers. Among the matters considered by NASA during its review should be (1) that the loan policy is designed to limit the type of equipment and the conditions under which it can be borrowed; (2) whether loan procedures should require approvals of at-home use requests be outside requesters' immediate work units; and (3) the need for notification requirements and enforcement procedures related to lenders' potential liability to replace or repair borrowed equipment, depending upon the conditions under which it is damaged, lost, or stolen.

After the review results are available, NASA should determine the extent to which the property weaknesses at JPL, as well as those that may be found elsewhere throughout NASA, should be reported—together with their corrective action plans—under the Federal Managers' Financial Integrity Act.

We recommend that the NASA Administrator require that JPL, with the advice and assistance of NASA's Management Office (1) review its equipment lending policy, procedures, and practices and make them consistent with NASA's policy; (2) use the upcoming property survey and inventory to improve its property control system by identifying and recording the location of all equipment; (3) evaluate and revise its procedures for receiving, tagging, and tracking inventory items from receipt through final disposition, including equipment at Caltech; and (4) identify and dispose of obsolete or excess equipment.

We also recommend that the NASA Administrator take the following actions:

- Review the policy on equipment loans, revise it to the extent necessary to ensure its adequacy for limiting at-home equipment loans, and direct NASA headquarters and field organizations to conform their lending procedures and practices to the revised policy and to establish adequate controls for identifying and tracking loaned equipment.
- Determine the extent to which the property control weaknesses at JPL, as well as those found elsewhere in NASA as a result of the agencywide review, should be reported under the Federal Managers' Financial Integrity Act.

Scope and Methodology

We reviewed the FAR and the NASA FAR Supplement provisions related to the management of government property in the possession of contractors. In addition, we reviewed NASA's directives and JPL's instructions on equipment management, and discussed equipment management with property and procurement officials at NASA headquarters and the NASA Management Office at JPL. We also met with JPL property and procurement officials, and with Caltech representatives at JPL and on the Caltech campus.

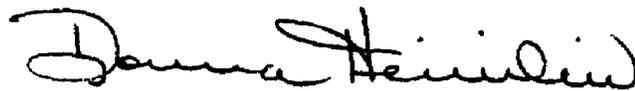
To evaluate the effectiveness of government and contractor controls over property, we reviewed both JPL and Caltech property reports and files; selectively sampled equipment and verified its existence; and checked the accuracy of JPL and contractor records. We also (1) reviewed the results of prior assessments performed by NASA headquarters at JPL and by the Office of Naval Research at Caltech; (2) reviewed audit reports issued by NASA's Inspector General office at JPL, the Caltech internal audit department, and the Defense Contract Audit Agency staff at JPL; (3) reviewed JPL's and Caltech's property control procedures; and (4) discussed controls with cognizant government property administrators and contractor property managers.

To determine the nature of equipment being loaned to employees, we obtained five electronic data files on loaned equipment from JPL. We analyzed and summarized the information used throughout this report from those files. On selected equipment loans to JPL employees, we spoke with JPL section managers and employees regarding the equipment loan authorization process, the accuracy of data on the loan authorizations, and the uses and benefits of the equipment on loan. We also compared the data on the equipment loan authorizations with JPL's property reports.

We conducted our work from June 1993 to March 1994 in accordance with generally accepted government auditing standards. As requested, we did not obtain agency comments on a draft of this report. However, we discussed our findings with NASA officials and Caltech representatives and included their comments where appropriate.

As arranged with your office, unless you publicly announce this report's contents earlier, we plan no further distribution until 30 days after its issue date. At that time, we will send copies of this report to the Administrator, NASA; appropriate congressional committees; the Director, Office of Management and Budget; and other interested parties upon request.

Please contact me at (202) 512-8412 if you or your staff have any questions concerning this report. The major contributors to this report are listed in appendix I.



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