

W

September 30, 1998

TO: AO/Chief Information Officer

FROM: W/Assistant Inspector General for Auditing

SUBJECT: Final Report on the Audit of the Year 2000 Date Conversion –
Assessment Phase
Assignment Number A-HA-98-032
Report No. IG-98-040

The subject final report is provided for your use and comment. Our evaluation of your response is incorporated into the body of the report. The corrective actions taken or planned for recommendations 2 and 3 were responsive. With respect to the nonconcurrency with recommendation 1, we reaffirm our position and have provided additional information for your consideration. Accordingly, we request that management reconsider its position on recommendation 1 and provide us additional comments by November 1, 1998. We consider recommendations 2 and 3 to be closed.

If you have questions concerning the report, please contact Mr. Brent Melson, Program Director for Information Assurance Audits, at (202) 358-2588, or Ms. Clara Lyons, Auditor-in-Charge, at (216) 433-8985. We appreciate the courtesies extended to the audit staff. The report distribution is in Appendix D.

[original signed by]

Russell A. Rau

Enclosure

cc:

B/Chief Financial Officer

G/General Counsel

JM/Director, Management Assessment Division

IG-98-040

**AUDIT
REPORT**

**YEAR 2000 DATE CONVERSION –
ASSESSMENT PHASE**

SEPTEMBER 30, 1998



National Aeronautics and
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ACRONYMS

ARC	Ames Research Center
CIO	Chief Information Officer
COTS	Commercial-off-the-Shelf
FY	Fiscal Year
GSFC	Goddard Space Flight Center
IT	Information Technology
JSC	Lyndon B. Johnson Space Center
KSC	John F. Kennedy Space Center
LeRC	Lewis Research Center
MSFC	George C. Marshall Space Flight Center
OMB	Office of Management and Budget
OIG	Office of Inspector General
Y2K	Year 2000

Report on the Audit of the Year 2000 Date Conversion – Assessment Phase

Introduction

The NASA Office of Inspector General (OIG) is conducting an ongoing audit of the Agency's assessment of the Year 2000 (Y2K) date conversion problem. NASA has devoted considerable resources to remedy this Y2K problem. This report reflects a limited review of the assessment phase, and does not provide conclusions on the overall effectiveness of NASA's Y2K program.

The overall objective of the audit was to determine whether NASA has adequately assessed the magnitude of the effort and is accurately reporting the results of its assessment. During a planning discussion with representatives from the Office of the Chief Information Officer (CIO), the OIG made a commitment to provide proactive feedback on any findings or concerns identified during the audit. This report discusses issues associated with the inventory process and cost estimations at Ames Research Center (ARC), Goddard Space Flight Center (GSFC), Lyndon B. Johnson Space Center (JSC), John F. Kennedy Space Center (KSC), Lewis Research Center (LeRC), and George C. Marshall Space Flight Center (MSFC). Appendix A contains additional information on our audit objectives, scope, and methodology.

We are continuing our audit efforts on the adequacy of the inventory process, classification of systems by criticality, compliance testing, conversion strategies, data exchanges, and contingency planning.

Results in Brief

Overall, NASA has established demanding goals and made noteworthy progress in addressing the Y2K date conversion problem. However, the Centers we reviewed did not have documented support for cost estimates reported to the Office of Management and Budget (OMB) and did not prepare them using a consistent methodology for estimating costs. As a result, we could not determine the reasonableness of the estimates. Documentation did not always exist at JSC and KSC to support the manner in which assessments for Y2K compliance were conducted and the decisions reached based on those assessments. As a result, the two NASA Centers may have overstated the extent of Y2K compliance. Also, NASA Centers can improve on sharing information on the status of Y2K compliance associated with commercial-off-the-shelf (COTS) products in order to avoid duplication of testing efforts and associated costs.

Background

Many computer systems and applications use a standard two-digit format (MM/DD/YY) to generate a date. The change of date from 1999 to 2000 and beyond has the potential to affect the

integrity of data and the continuity of processing capabilities. With the Y2K change, any system or program, including desktop software, could be affected when two digits are used to represent the year.

The Y2K assessment process includes identifying and evaluating the criticality of information systems. However, the process cannot be limited to a simple inventory of applications and computing platforms. Strategies to test for date compliance, correct identified problems, develop contingency plans, and estimate costs must be in place.

Because of the anticipated magnitude and potential effects of the Y2K problem in the Federal Government, the President issued Executive Order 13073, February 4, 1998, "Year 2000 Conversion," directing Federal agencies to ensure that no critical Federal program disruption occurs because of Y2K problems. OMB Memorandum No. 98-02, "Progress Reports on Fixing Year 2000 Difficulties," January 20, 1998, requires some Federal agencies, including NASA, to provide quarterly reports on progress in addressing the difficulties relating to the Y2K problem. Among other items, NASA must report (1) progress in identifying and fixing mission-critical and nonmission-critical systems, (2) estimates of cost for fiscal years (FYs) 1996 through 2000, (3) efforts to identify data exchanges, and (4) the approach for contingency planning.

The NASA Administrator initiated the Y2K program in 1996 and is accountable for its ultimate success. He has delegated accountability and responsibility for the overall Y2K program to the NASA CIO. The Y2K program has a management approach that is consistent with, and supportive of, the Agency's framework for strategic and program management. The Y2K program manager, who reports directly to the NASA CIO, has day-to-day responsibility for managing the program. Enterprise Associate Administrators and Center Directors are accountable for ensuring that Y2K program requirements are met within their respective areas of responsibility. Enterprise CIO representatives have been assigned and are responsible for coordinating Y2K progress at the Centers for which they have institutional responsibility. Center CIO representatives have been assigned and are responsible for ensuring that all Y2K problems or deficiencies are identified, planned for, and resolved on schedule and within budget. The Enterprise Associate Administrators and the Center Directors have delegated signature authority to the Enterprise CIO and Center CIO representatives, respectively. Each Center has designated a Y2K project manager responsible for the day-to-day management and oversight of Center Y2K initiatives.

Y2K Cost Estimates

Finding. NASA cannot adequately support the Y2K cost estimates it is reporting to OMB. OMB requires heads of selected agencies to provide quarterly reports outlining the status and related cost estimates of Y2K efforts. Although OMB requires the Agency to submit cost estimates, the NASA CIO has not provided detailed guidance to the Centers regarding cost models and estimation strategies or the maintenance of supporting documentation. As a result, some Centers prepared cost estimates inconsistently and at least three Centers had inadequate support for their estimates. Therefore, the estimates may not adequately reflect the cost of Y2K remediation.

NASA provided Y2K remediation cost estimates to OMB for the first time in May 1997 and continues to provide updates on a quarterly basis. NASA's consolidated cost estimate reported in August 1998 totaled \$46.9 million. The cost estimate included data the Centers provided to the NASA Y2K program manager. The CIO did not provide the Centers specific guidance on estimating costs to ensure consistency in estimating and reporting cost components. Also, the Centers had limited detail to support their cost estimates. To some extent, at least three Centers based cost estimating on oral communications with little or no supporting documentation from Center personnel to the Center Y2K manager. In addition, cost estimate components varied from Center to Center. For example, some Centers included labor costs in their cost estimates while other Centers do not track labor costs. In other instances, some Centers either have not tracked or have stopped tracking actual costs for Y2K remediation that could be used to adjust cost estimates.¹

In its Memorandum 97-13, "Computer Difficulties Due to the Year 2000 – Progress Reports," May 7, 1997, OMB outlined a reporting format for quarterly reports. One of the requirements calls for reporting any changes to estimates of Y2K information technology costs. OMB revised the cost estimate requirement in Memorandum 98-02, "Progress Reports on Fixing Year 2000 Difficulties," January 20, 1998, by requiring agencies to report estimated costs each reporting period, even if the estimate has not changed. Further, OMB Memorandum 98-14, "Comprehensive Plans and Associated Funding Requirements for Achieving Year 2000 Computer Compliance," August 13, 1998, requested agencies to provide comprehensive plans and associated funding requirements for achieving Y2K compliance. OMB will use the plans and funding requirements to assess FY 1999 Y2K funding requirements in light of evolving congressional action on the pending FY 1999 appropriations bills.

Although the OMB requirement for reporting estimated costs has been in place since May 1997, the CIO has not provided specific detailed guidance to the Centers on estimating Y2K costs. A few of the Centers made good faith efforts to provide realistic initial cost estimates. However, we could not determine whether the total cost estimates NASA reported to OMB were

¹ NASA's current accounting system does not allow for the unique identification of all Y2K costs.

consistently prepared or supportable. Therefore, NASA's Y2K cost estimates may not adequately reflect the true cost of Y2K remediation efforts.

The importance of tracking and estimating Y2K costs has increased given OMB's August 13, 1998, request for NASA's FY 1999 Y2K funding requirements. Accurate funding requirements are a key component in congressional action regarding Y2K contingency funds. The lack of consistent and supportable funding requirements, whether actual or estimated costs, could affect the amount of contingency funds available to the Agency.

Recommendation 1. The NASA CIO should develop and issue guidance on the methodology Centers should use in estimating and adjusting Y2K cost estimates and on maintaining appropriate supporting documentation for the estimates.

Management's Response. Nonconcur. The CIO stated that early in the Y2K program, his predecessor communicated directly with Center CIOs to provide guidance on common Y2K cost elements and on consistent Agency approaches for estimating costs. The current CIO has provided cost guidance to the Centers through a December 1997 workshop and as part of the Agency's Budget Program Operating Plan process. The cost guidance is consistent with OMB cost guidance. The CIO stated that historical and projected estimated costs reported by each NASA Center are aggregated to provide an overall Agency Y2K cost estimate that is documented and maintained in the NASA Y2K program management database.

Evaluation of Management's Response. We consider management's comments nonresponsive to the recommendation. Although management stated that common Y2K cost elements and cost guidance were provided, we found no written documentation to support that statement. Additionally, the audit showed that the Centers are using different methodologies in their cost estimates. We believe that detailed guidance on specific cost elements, cost models, estimation strategies, and the maintenance of supporting documentation should be provided to the Centers. NASA is documenting and maintaining estimated costs in the NASA Y2K program management database; however, the database shows only a total for FYs 1996 through 2000 for each Center's cost estimates. We ask management to reconsider its position in response to the final report.

Documentation of Inventory Assessment for Y2K Compliance

Finding. NASA initiated the assessment phase for Y2K compliance in August 1996 and completed it in August 1997. During that phase, the Centers identified information technology (IT) and non-IT systems (for example, facilities or aircraft that may have products with embedded processing chips that are date sensitive) and assessed their vulnerability for Y2K problems. JSC has not always documented its analyses of non-IT systems, and KSC has not documented the analysis of one information technology (IT) system for Y2K compliance during the assessment phase. Although the NASA CIO issued guidance on July 2, 1998, for documenting Y2K compliance, adequate guidance was not available during the critical, early stages of the assessment

phase. Without documentation, the Agency has no assurance that all date-sensitive systems have been adequately assessed for Y2K compliance.

During the initial stages of assessment, when as all NASA Centers were to identify IT and non-IT systems and to analyze or test for Y2K compliance, the CIO had not yet provided adequate guidance and procedures for the certification process. On July 2, 1998, the CIO issued the "NASA Year 2000 Agency Test and Certification Guidelines and Requirements." The document requires inventory items that have been classified as "not date sensitive" to be either tested or documented as "not date sensitive." The document also requires a signed certification statement by a NASA employee and outlines comprehensive guidelines for assessment, including requirements for the documentation of testing methods used. By the time the CIO published the guidance, many systems had already been evaluated for Y2K compliance.

Examples of systems that lack documentation include:

- The KSC Record and Playback Subsystem. This is a subsystem of the Launch Processing System for the Space Shuttle. The subsystem records all Shuttle raw telemetry data and troubleshoots vehicle and payload operations.
- The JSC Central Security Control System. This system controls site entry and access to critical facilities and resources.
- Aircraft at JSC. NASA uses aircraft for a variety of experiments and research. These aircraft can have Y2K-sensitive systems and subsystems.

Because systems make use of dates in a variety of ways, there is no single process for determining compliance. Various strategies must be considered to determine the appropriate evaluation methodology. For example, the evaluation can require testing or communication with the manufacturer. Therefore, documentation of the assessment for compliance should be required to establish accountability for assessment methods used and decisions reached. Additionally, adequate documentation may be needed for future system reevaluation and the prevention of unnecessary or duplicative testing.

Recommendation 2. The NASA CIO should direct the Centers to identify all IT and non-IT systems that have been assessed for Y2K compliance and ensure that documentation supports the work performed and conclusions reached.

Management's Response. Concur. The CIO has provided written guidance, approaches for testing, and certification and will reemphasize the importance of supporting the work performed and conclusions reached with documentation.

Evaluation of Management's Response. The actions taken by the NASA CIO are responsive to recommendation 2.

Inventory for COTS Products

Finding. Centers are not sharing information on the status of COTS products in an efficient and effective manner. Information sharing needs improvement because the current process does not allow for continuous updates as the inventory of COTS products is identified and evaluated. As a result, the Centers could unnecessarily duplicate product evaluation efforts and incur additional associated costs.

COTS products are hardware and software that can be purchased commercially. NASA established a standard Agency-wide process to evaluate and certify COTS products. IT Lead Centers, ARC, LeRC, and MSFC, have the responsibility for assessing, testing, and certifying COTS products used by NASA. The Lead Centers built certification-tracking databases and share information across the Agency through the Internet. However, at least three of the six Centers reviewed are testing, certifying, and tracking additional inventory lists of COTS products internally. Activity associated with internally tracked products is currently not shared with other Centers through updates to the tracking databases. For example, LeRC is internally tracking about 1,100 workstation COTS products in addition to those products on the certification-tracking databases. ARC is tracking its local area network COTS products. Because those products may be used at other Centers, evaluation efforts could be unnecessarily duplicated and additional associated costs could be incurred.

Recommendation 3. The NASA CIO should direct NASA Center Directors to share all information on the status of COTS products and to establish processes to reduce redundancy of evaluation efforts.

Management's Response. Concur. The CIO has (1) tasked LeRC to evaluate its tracking and reporting process for desktop product information and will implement recommended improvements, as appropriate, and (2) will establish a consolidated internal Agency Web site that will provide direct links to any Center Web-accessible COTS inventory. The CIO plans to complete this action by October 31, 1998.

Evaluation of Management's Response. The actions taken or planned by the NASA CIO are responsive to recommendation 3.

General Comments. Management provided general comments on our report that we address in Appendix C.

Appendix A

Objective, Scope, and Methodology

Objective

The overall objective of the audit is to determine whether NASA has adequately assessed the magnitude of the Y2K effort and is accurately reporting to OMB the results of its assessment. Specifically, we evaluated whether the six Centers have:

- conducted a comprehensive inventory of IT systems and non-IT systems;
- adequately tested to identify the magnitude of the Y2K problem;
- reasonably estimated the cost of fixing the Y2K problem; and
- accurately reported the status of the Y2K project to the OMB.

Scope and Methodology

To determine whether the six Centers have adequately conducted a comprehensive inventory of IT systems and non-IT systems, assessed the magnitude of the problem, reasonably estimated the cost, and are accurately reporting the results of their assessments of Y2K efforts, we:

- Interviewed the NASA Y2K program manager and Center Y2K project managers at ARC, GSFC, JSC, KSC, LeRC, and MSFC.
- Interviewed appropriate personnel at ARC, GSFC, JSC, KSC, LeRC, and MSFC.
- Reviewed detailed inventories where available.
- Reviewed cost estimates and supporting documentation where available.
- Reviewed OMB quarterly reports submitted by the Centers.
- Reviewed the NASA Y2K Program Plan.
- Reviewed the “NASA Year 2000 Agency Test and Certification Guidelines and Requirements.”

Appendix A

Audit Field Work

We performed field work from June 1 through September 11, 1998, at ARC, GSFC, JSC, KSC, LeRC, and MSFC. The audit was performed in accordance with generally accepted government auditing standards.

Appendix B

Management's Response

National Aeronautics and
Space Administration
Office of the Administrator
Washington, DC 20546-0001



SEP 28 1998

TO: W/Inspector General

FROM: AO/Chief Information Officer

SUBJECT: Draft Report on the Audit of the Year 2000 Date Conversion - Assessment Phase (Assignment Number A-HA-98-032)

Thank you for the opportunity to review and comment on the subject draft report. We recognize that there are always opportunities for improvement in a program of this scope and complexity, and welcome your timely assistance in surfacing issues.

Your report highlights three areas where you make recommendations intended to improve Agency Y2K performance and management controls. NASA has demonstrated a solid track record of accomplishments relative to the Y2K challenge and is only 6 months away from implementing remediation actions on thousands of inventory items. Since its inception in 1996, the NASA Y2K Program has been subjected to an unprecedented level of internal and external reviews. The report's three findings and recommendations do not represent a significant risk to the Agency or the Y2K Program. While there may be differences of opinion regarding our progress and potential areas of risk, we believe your report should provide a more balanced perspective of the NASA Y2K Program.

Notwithstanding these general comments, we offer the following response to each of the three report findings and recommendations:

Finding and Recommendation 1: Y2K Cost Estimates

We disagree with the first set of findings and the recommendation on Y2K cost estimates.

The draft report states that, "NASA cannot adequately support the Y2K cost estimates it is reporting to OMB." NASA has reported estimated costs to OMB on a quarterly basis since May 1997. Historical and projected estimated costs reported by each NASA Center are aggregated to provide an overall Agency Y2K cost estimate. Y2K reported costs are documented and maintained in the NASA Y2K Program management data base.

NASA formulated initial Y2K cost estimates given our understanding of the scope and complexity of the Y2K problem at that time. Throughout the Y2K Program, Centers have refined cost estimates as they have progressed through the phases of assessment,

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renovation, validation, and implementation. The NASA CIO requires that Centers identify any significant adjustment to estimated Y2K costs on a quarterly basis. Since May 1997, NASA costs have increased from \$44.6 to \$46.9 million for FY 1996-FY 2000, evidence that Centers are, in fact, adjusting cost estimates to reflect current understanding of Y2K requirements.

While the report questions NASA's Y2K cost estimates, it offers no evidence that NASA cost estimates are not valid. The report recommends that "the NASA CIO should develop and issue guidance on the methodology Centers should use in estimating and adjusting Y2K cost estimates and on maintaining appropriate supporting documentation for the estimates." NASA is reasonably confident that our methodology has resulted in realistic cost estimates. At this point in the NASA Y2K Program, issuing additional cost guidance and requirements for further cost refinements would provide little value to the Agency and result in a further disbursement of limited staff resources. We will continue to require Centers to report any significant adjustment to estimated costs throughout the remainder of the NASA Y2K Program.

We disagree with the finding that, "the NASA CIO has not provided detailed guidance to the Centers regarding cost models and estimation strategies or the maintenance of supporting documentation." Early in the Y2K Program, the (then) NASA CIO communicated directly with Center CIO Representatives to provide guidance on common Y2K cost elements and consistent Agency approaches for estimating costs. Since November 1997, the NASA CIO has provided cost guidance to the Centers that is consistent with OMB cost guidance, as follows:

"NASA estimated costs to address Y2K requirements include the costs of identifying necessary changes to meet Y2K compliance requirements, evaluating the cost effectiveness of making those changes, making changes, testing systems, and contingencies for failure recovery. The estimates do not include the costs of upgrades or replacements that would otherwise occur as part of a normal system lifecycle. The costs also do not include the Federal share of the costs for any state information systems that support NASA programs."

The NASA CIO and Y2K Program Manager reviewed this cost guidance with NASA CIO Representatives and Y2K Project Managers as part of the Agencywide Y2K Workshop in December 1997.

The NASA CIO has also provided Y2K guidance as part of the Agency's Budget Program Operating Plan (POP) process. As part of the annual POP process, the NASA CIO identifies information technology (IT) management and technical initiatives that require special management focus. Y2K was highlighted as a CIO Strategic Focus Area in the

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FY 1999 and FY 2000 POP calls, including specific guidance for reporting Y2K budget plans/estimated costs. Over the last 2 years, the NASA CIO has sponsored workshops and reviews with Center staff from both the CIO and Chief Financial Officer communities. The purpose of these workshops was to review POP guidance for reporting budget plans, including the Y2K component. It should also be noted that the most comprehensive set of guidance for reporting budget plans among NASA functional areas is the IT function.

NASA's methodology for reporting Y2K planned and actual costs is consistent with how we report overall IT funding requirements/costs through the Agency POP process. Agency reported IT budget requirements/costs includes two components. These are (1) costs which are identifiable in Center accounting systems (i.e., costs reported by accounting systems against specific IT Object Class codes); and (2) management estimates for IT costs associated with mixed use support contracts. Y2K work is typically one element of a larger IT cost element and, as such, reported costs are consistent with this approach. The NASA CIO requires that Centers update estimated Y2K costs quarterly to reflect the best understanding of actual and projected costs (including costs accounted against specific IT Object Class codes and management estimates). We will continue to track and report Y2K estimated costs consistent with this established approach.

NASA is committed to funding Y2K work out of our existing budget, consistent with the fiduciary constraints established by OMB and Congress. We have made every attempt to accurately estimate and report NASA Y2K costs and believe that no further management action is necessary.

Finding and Recommendation 2: Documentation of Inventory Assessment for Y2K Compliance

We concur with comment on the recommendation, "The NASA CIO should direct the Centers to identify all IT and non-IT systems that have been assessed for Y2K compliance and ensure that documentation supports the work performed and conclusions reached." The NASA CIO has already issued written direction to Centers to meet this requirement.

On June 24, 1998, the NASA CIO issued a memorandum to Officials-in-Charge of Headquarters Offices; Directors of NASA Centers; and, the Director of the Jet Propulsion Laboratory, which included the following direction:

"NASA's list of items requiring remediation was initially established in August 1997. To ensure that all Y2K anomalies have been identified and corrected, we are requiring that all NASA inventory items be certified by a NASA employee as Y2K compliant by March 31, 1999. Centers are responsible for determining what constitutes an inventory item to be certified compliant for Y2K purposes. An inventory item may be a combination of

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custom software, hardware, or Commercial-off-the-Shelf product, or any component item. Certification may be demonstrated by either testing conducted by or for NASA, and/or written certification by a vendor. By June 30, we will establish minimal requirements for risk-based test approaches, criteria, and processes that Centers must incorporate as part of the Y2K certification process. (Note: NASA Y2K Agency Test and Certification Guidelines and Requirements document was subsequently issued on July 2, 1998).

Details on NASA's tactical strategy for ensuring we systematically evaluate all inventory items are documented in the NASA Y2K Agency Test and Certification Guidelines and Requirements, issued July 1998. This document provides general guidance and requirements for Y2K certification and testing and establishes minimum required Y2K test criteria and certification processes, including documentation requirements, to be consistently applied to NASA inventory items. In addition, NASA's Y2K approach requires that assessment, like awareness, continue into the new millennium. We will continue ongoing reassessment through 1999, and, as we identify Y2K implications, triage and implement required remediation actions.

Program requirements that address the recommendation to "identify all IT and non-IT systems that have been assessed for Y2K compliance and ensure that documentation supports the work performed and conclusions reached" are also detailed in the NASA Y2K Program Plan, which was signed by the NASA CIO and concurred on by each Enterprise Associate Administrator and each Center Director.

Each of the examples cited in the report as lacking appropriate documentation are subject to the Agency Y2K requirements described above. For example, the KSC Replay Payback Subsystem cited in the report was tested and certified as Y2K compliant, consistent with NASA's Test and Certification Guidelines and Requirements, on September 1, 1998. Note: The correct system title is the Record and Playback Subsystem (PRS), and it is not the Launch Processing System, but rather an element of the Launch Processing Subsystem. The JSC Central Security Control System has been tested to demonstrate that there are no Y2K problems. This system will be tested again and documented as required, as part of the overall certification process. JSC has found that, in general, their aircraft have very few date sensitive systems, although each will be certified as part of the overall certification process.

We believe current NASA Y2K written guidance and our approaches for testing and certification and continuous reassessment meet the intent of the audit recommendation. We will continue to reinforce the importance of meeting these requirements and to provide documentation to support work performed and conclusions reached. We believe no further management action is required.

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Finding and Recommendation 3: Inventory for COTS Products

We concur with comment on the recommendation, "The NASA CIO should direct NASA Center Directors to share all information on the status of COTS products and to establish processes to reduce redundancy of evaluation efforts."

NASA established lead centers to plan, track, and integrate testing and compliance results on commercial products in key areas, namely mainframe, midrange, communications, desktop, and supercomputing. This Agency approach was intended to leverage the expertise of the Agency and minimize redundant efforts and costs across the Centers. This approach is an Agencywide collaborative effort, in which all Centers are assigned COTS products to test and validate compliance - in addition to those they may elect to validate or test at their own Center.

While this approach has been successful, we agree that there are additional opportunities for improving the efficiency and effectiveness of information sharing regarding COTS products within the Agency. We have recently surveyed the Centers to identify improvements in this area. Based on our assessment, we are taking the following actions:

- We have tasked the LeRC to evaluate their tracking and reporting process for desktop product information and will implement recommended improvements, as appropriate.
- We will establish a consolidated internal Agency Web site that will provide direct links to any Center Web-accessible COTS inventory. We plan to complete this action by October 31, 1998.

We believe these actions will improve the Agency's ability to share information about COTS products and their Y2K status more efficiently.

Thank you for providing constructive information on how we may improve the management and performance of the NASA Y2K Program. Per our meeting on September 25, 1998, we understand the final report will reflect that the scope of this audit has been limited, and that based on findings to date, no conclusions regarding the overall NASA Y2K Program have been made.

We look forward to working with you throughout the remainder of the Program.



Lee B. Holcomb

Appendix C

Management's General Comments and Audit Responses

The Chief Information Officer provided the following general comments in response to our draft report.

Management's Comments. In his introductory response, the CIO indicates that the report's three findings and recommendations do not represent a significant risk to the Agency or the Y2K Program. While there may be differences of opinion regarding our progress and potential areas of risk, he believes our report should provide a more balanced perspective of the NASA Y2K Program.

Audit Response. The Introduction section of this report states that the audit is ongoing and that this report reflects a limited review of NASA's assessment phase. We will continue to provide NASA management with proactive feedback through similar reports as our audit proceeds. While the issues presented in this report may not represent a serious risk to the Agency or the Y2K program in the opinion of the CIO, the inability of NASA management to demonstrate the nature and extent of assessments performed on critical and noncritical systems poses a considerable risk to NASA. Specifically, documentation of the assessments is essential to ensuring that all required testing was performed and that all identified deficiencies are corrected. Absent this assurance, NASA may be faced with either undetected or detected but uncorrected deficiencies, which, in turn, could impact mission accomplishment. Concerning cost estimates, these are essential to ensuring that resources are made available and allocated based on the highest priority requirements. In essence, the cost estimates are the link to resources that provide for detection and correction of Y2K problems. With regard to COTS, limited resources can be conserved through the type of sharing of information we recommended and can be put to better use.

Management's Comments. Regarding Y2K cost estimates, the CIO comments that while the report questions NASA's Y2K cost estimates, it offers no evidence that NASA cost estimates are not valid.

Audit Response. We could not express an opinion on the validity of the cost estimates because of the lack of documentation to support the development of the estimates.

Management's Comments. The CIO noted that the correct system title is the Record and Playback Subsystem.

Audit Response. We agree with the CIO's comment and have changed the report accordingly.

Appendix D

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Appendix D

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