W December 23, 1999

TO: AO/Chief Information Officer

FROM: Assistant Inspector General for Auditing

SUBJECT: Final Report on Review of NASA's Year 2000 Day One Planning
Assignment Number A0002300
Report Number IG-00-003

The subject final report is provided for your information and use. Please refer to the Results in Brief section of the report for the overall review results. The report contains no recommendations and management comments were not required.

If you have questions concerning the report, please contact Mr. David L. Gandrud, Program Director, Information Technology Program Audits, at (650) 604-5665, or Mr. Roger W. Flann, Program Manager, at (818) 354-9755. We appreciate the courtesies extended to the audit staff. The final report distribution is in Appendix C.

[original signed by]
Russell A. Rau

Enclosure

cc:
B/Chief Financial Officer
B/Comptroller
BF/Director, Financial Management Division
G/General Counsel
JM/Director, Management Assessment Division

bcc:
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IG-00-003

REVIEW REPORT

NASA'S YEAR 2000 DAY ONE PLANNING

December 23, 1999

National Aeronautics and Space Administration

OFFICE OF INSPECTOR GENERAL

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Acronyms

BCCP	Business Continuity and Contingency Plan
CIO	Chief Information Officer
GAO	General Accounting Office
NACC	NASA Automated Data Processing Consolidation Center
OMB	Office of Management and Budget
Y2K	Year 2000

NASA Office of Inspector General

IG-00-003 **December 23, 1999**
A0002300

NASA's Year 2000 Day One Planning

Introduction

The Year 2000 (Y2K) date conversion problem affects computer systems worldwide. Software application programs that use a standard two-digit format (mm/dd/yy) to generate a date may not work properly after the year 2000.

In January 1999, the NASA Chief Information Officer (CIO) issued a guide[1] to the Agency's Enterprises and Centers relating to the development of business continuity and contingency plans (BCCP's). The Enterprise BCCP's were to address major programs and projects. The Center BCCP's were to address Center core processes (including the Agency-wide services provided by the Center), Center infrastructure, and mission-critical systems (158 in total) identified in the Agency's Y2K inventory.

In October 1999, the Office of Management and Budget (OMB) directed agencies to complete their Day One[2] planning and update their BCCP's by October 15, 1999. Specifically, OMB directed agencies to ensure that their Day One planning addressed seven key elements: schedule of activity, personnel on call or on duty, contractor availability, communications with the workforce, facilities and services to support the workforce, security, and communications with the public. (Details on these key elements are in the Background section of this report.) OMB also directed agencies to consider General Accounting Office (GAO) guidance[3] in developing the Day One plans.

Our review objective was to assess the adequacy of NASA's Day One planning in the context of OMB's October 1999 requirements and GAO guidance. To accomplish this objective within the short time remaining in 1999, we limited our review to determining whether the NASA Year 2000 BCCP, dated October 15, 1999, adequately addressed seven key elements of Day One planning as required by OMB. Also, we performed limited review procedures at three Centers[4] to ensure that the Agency-level BCCP

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[1] The NASA guide is titled, "NASA Year 2000 (Y2K) Business Continuity and Contingency Plan Guide (BCCP)."
[2] The General Accounting Office has defined the Day One strategy as a comprehensive set of actions to be executed by Federal agencies during the last days of 1999 and the first days of 2000.
[3] The GAO Guide is titled, "Y2K Computing Challenge: Day One Planning and Operations Guide," dated October 1999. (GAO/AIMD-10.1.22)
[4] Goddard Space Flight Center (Goddard), Lyndon B. Johnson Space Center (Johnson), and George C. Marshall Space Flight Center (Marshall).

accurately reflected Day One planning at those Centers. Details on our scope and methodology are in Appendix A. We have issued seven other reports related to the Y2K issue; those reports are summarized in Appendix B.

Results in Brief

Based on our limited review, NASA's Year 2000 Day One planning strategy complies with OMB requirements and GAO guidance. The Deputy NASA CIO attributed the Agency's compliance to frequent communications and close coordination between Headquarters and Center CIO personnel, including a "face-to-face" CIO workshop in June 1999 and weekly teleconferences. As a result of its compliance with the requirements and guidance, the Agency should be adequately prepared to manage the date rollover from 1999 to 2000. This report contains no recommendations for corrective action, and the CIO chose not to provide written comments.

Background

To help ensure that Federal agencies are adequately prepared for the Day One rollover, OMB provided broad direction to agencies to develop Day One strategies that include each of the following seven key elements:

- **Schedule of activity.** The agency should schedule the activities that will take place before, during, and after the rollover from December 31 to January 1.
- **Personnel on call or on duty.** The agency should decide who must be on duty or on call to support the agency's activities and when they will need to be available.
- **Contractor availability.** The agency should assure that its contractors are prepared to provide needed assistance.
- **Communications with the workforce.** The agency should assure the ability to communicate internally, with its contractors, with its partners in program delivery, and with its constituency as appropriate.
- **Facilities and services to support the workforce.** The agency should assure that buildings, telecommunications, transportation (including parking), food services, and other infrastructure needed to support its workforce will be available during the rollover period.
- **Security.** The agency should assure that special security measures are taken to address vulnerabilities created by events during the rollover period.
- **Communications with the public.** The agency should provide a capability to communicate with the public about the impact of the problem on the agency, the agency's programs, and the agency's constituencies.

OMB also directed that agencies consider the GAO Guide in developing their Day One plans. The Guide provides a conceptual framework for helping agencies develop a Day One strategy and reduce the risk of adverse Y2K impact on agency operations. It builds upon GAO's previously issued guidance[5] on Year 2000 business continuity and contingency planning, and draws on other sources, including the Social Security Administration, International Business Machines Corporation, and the Legislative Branch Y2K Group.

As stated in NASA's BCCP dated October 15, 1999, the Agency's Day One strategy is based on a heightened level of readiness, with additional staff for coordinating activities and checking critical operational capabilities during the rollover period. Centers will follow established processes and procedures for handling anomalies (for example, mission operations and weather-related emergencies). Also, Centers will monitor status and conditions and take necessary action at the lowest applicable management level, escalating attention to higher management levels, as appropriate.

Agency-Level Day One Planning

Based on our review, the Agency's overall Day One planning strategy complies with OMB requirements and GAO guidance. Specifically, the NASA BCCP adequately addressed each of the seven broad elements prescribed by OMB. For example, OMB required that agencies establish appropriate plans to have personnel on call or on duty during the rollover period. The NASA BCCP addresses the OMB requirement:

> NASA Centers will augment their normal holiday personnel with special Y2K-related staff during December 31 through January 2, 2000. Key civil service, Emergency Services, and contractor personnel will be on site or on call as needed to resolve anomalies. On-call or on-duty personnel, including both Civil Service and contractor staff, have been informed of the need for their availability.

By complying with each of OMB's seven requirements and with the GAO guidance, the Agency should be adequately prepared to manage the date rollover from 1999 to 2000.

Center-Level Day One Planning

Based on our review of selected Center-level BCCP's and supporting documentation, the Centers' Day One planning strategies comply with OMB requirements and GAO guidance. Specifically, we reviewed a total of seven programs at Goddard, Johnson, and Marshall to determine whether their Day One planning adequately addressed OMB requirements for a

[5] The GAO issued a guide entitled, "Year 2000 Computing Crisis: Business Continuity and Contingency Planning," August 1998.

"schedule of activity" and "personnel on call or on duty." Appendix A contains a list of the BCCP's reviewed. The Center-level BCCP's and supporting documentation adequately addressed the two elements reviewed. For example, with respect to personnel on call or on duty at the NASA Automated Data Processing Consolidation Center (NACC), at Marshall, Day One planning documents included a schedule of service restoration teams. The schedule identified team members and their responsibilities, on call as opposed to on duty status, and required times and dates of availability. For each of the seven BCCP's reviewed, Center-level Day One planning supports the Day One strategy described in the Agency-level BCCP.

Appendix A. Objective, Scope, and Methodology

Objective

The overall review objective was to assess the adequacy of NASA's Year 2000 Day One Plan. Specifically, our objective was to determine whether the Agency's Day One planning complied with OMB requirements and GAO guidance.

Scope and Methodology

Due to the short time remaining in 1999 to address Y2K issues, we limited our review to NASA Headquarters and selected Centers. In conducting this review, we examined the Day One strategy described in the Agency-level BCCP and performed limited review steps to ensure that the Agency-level BCCP accurately reflected Day One planning at Goddard, Johnson, and Marshall. Specifically, we:

- Interviewed NASA CIO personnel regarding the process used to develop an overall Day One strategy for the Agency.
- Reviewed OMB requirements and GAO guidance for Day One planning.
- Compared the Day One planning strategy described in the NASA BCCP to the OMB requirements and GAO guidance.
- Reviewed seven BCCP's and supporting documentation at the three Centers for compliance for two of the OMB requirements and the GAO guidance. The two elements selected for review were "schedule of activity" and "personnel on call or on duty." We judgmentally selected these two elements because we determined they were the most significant elements. The Centers and BCCP's reviewed were as follows:
  - Goddard: (1) Facilities, (2) Mission Services Program Office, and (3) Management Operations Directorate/Information Services and Advanced Technology Division/Applications Development Branch.
  - Johnson: (4) Information Systems Directorate and (5) Mission Operations Directorate.
  - Marshall: (6) NASA Integrated Services Network and (7) NACC.
- Examined applicable records and documents dated from October through November 15, 1999.

Management Controls Reviewed

We reviewed OMB requirements and GAO guidance to determine review criteria applicable to Day One planning. Also, we evaluated the process NASA used in developing the Agency-level Day One planning strategy and the procedures that the selected Centers will follow in supporting the strategy. We considered the management controls to be adequate.

Field Work

We performed field work for this report from December 2 through 11, 1999.

Appendix B. Summary of Prior Coverage

The NASA Office of Inspector General has issued seven final reports relating to the Y2K problem. (Visit www.hq.nasa.gov/office/oig/hq/issuedaudits.html for a copy of the reports.) The reports are summarized below.

"Year 2000 Program Oversight of NASA Grants and Cooperative Agreements," Report Number IG-99-048, September 24, 1999. Research performed under grants and cooperative agreements is important to NASA's mission, and sponsored research represents a significant portion of the Agency's procurement activities. Without uniform and specific Y2K reporting requirements, the Agency lacks reasonable assurance that it will receive research results that are unaffected by erroneous Y2K date-sensitive data. Also, without timely reporting by recipients, NASA may be unable to take appropriate remedial action by January 1, 2000. Adequate oversight is needed to mitigate potential, costly Y2K-related problems and to protect NASA's substantial investment in basic research. NASA requires recipients to report significant Y2K-related problems, but NASA has not established time frames for such reporting. Additionally, NASA does not require recipients to report on whether recipient computer systems are Y2K compliant. The combination of these conditions limits NASA's ability to determine whether Y2K-related problems exist but have not yet been reported. As a result, the Agency lacks reasonable assurance that it will receive research results that are not adversely affected by Y2K date problems or notification of such problems in time to take corrective action. We recommended that NASA management request major recipients of grants or cooperative agreements to report to the cognizant NASA procurement office by September 30, 1999, on whether recipient computer systems are compliant and on significant Y2K-related problems. Also, we recommended that NASA management require appropriate remedial actions to address any Y2K-related problems identified by the major recipients. Management concurred with each recommendation.

"NASA's Year 2000 Program – Renovation and Validation Phases," Report Number IG-99-034, September 20, 1999. The Agency guidelines for the renovation and validation phases were generally consistent with General Accounting Office guidance for addressing Y2K date conversion problems. Also, for those inventory items reviewed, documented evidence indicated general compliance with the Agency's renovation and validation phase requirements at five of the six locations audited. The Jet Propulsion Laboratory had generally complied with the renovation and validation phase requirements for nonmission-critical systems (systems that have minimal impact and risk), but had not progressed sufficiently for us to determine the adequacy of its validation efforts for mission-critical systems (systems that have high impact or risk). The Laboratory reported that it had completed the validation test phase for only one of four mission-critical systems. Regarding NASA's Y2K reporting to OMB, nothing came to our attention to indicate a material problem. This report contains no recommendations for corrective action.

"Year 2000 Program – Implementation Phase," Report Number IG-99-044, September 17, 1999. Under the leadership of the NASA Chief Information Officer, the Agency has been actively engaged in developing business continuity and contingency plans to prepare for Y2K-related failures. However, as of June 30, 1999, the four NASA installations reviewed had not incorporated various key elements into the business continuity and contingency plans and contingency test plans. (NASA will be updating its business continuity and contingency plans and test plans through November 1999.) Consequently, NASA lacks assurance that it can effectively respond to Y2K-related failures. We recommended that the NASA Chief Information Officer request Center and Enterprise managers to incorporate all key elements in the business continuity and contingency plans and update the Agency's business continuity and contingency plan guidance to address key test plan elements. Management concurred with both recommendations.

"**Exemptions for Year 2000 Testing," Report Number IG-99-025, May 13, 1999.** The Johnson Space Center, Financial Management Division, completed testing of the Center Financial System before NASA issued its July 1998 Testing and Certification Guidelines and Requirements, but did not obtain an exemption from use of the NASA guidance. The Johnson Chief Information Officer had not established procedures to implement the exemption process. Without the exemption, the Center lacks reasonable assurance that the Center Financial System will meet the minimum NASA testing requirements for Y2K compliance. We made four recommendations related to procedures for testing and exemptions of information technology assets that completed testing before the issuance of NASA's testing guidelines. Management concurred with the recommendations.

"Year 2000 Program Compliance Requirements in NASA Information Technology-Related Contracts," Report Number IG-99-022, March 31, 1999. NASA lacks reasonable assurance that its systems will be Y2K compliant on January 1, 2000. The Agency issued Y2K guidance for installations to follow when acquiring, operating, and maintaining information technology assets. The guidance required contracting officers to include a clause addressing Y2K in information technology solicitations and new contracts. Also, contracting officers were required to modify the statement of work to address Y2K in existing information technology operation and maintenance contracts. Each of the six locations audited had included the NASA-directed Y2K requirements in solicitations and new contracts used to acquire information technology assets. However, the Jet Propulsion Laboratory had not included the NASA-directed requirements in all its applicable information technology operation and maintenance contracts as of January 31, 1999. Jet Propulsion Laboratory management attributed its delay to other workload priorities. Untimely incorporation of the Y2K compliance requirements into NASA contracts adversely affects the Agency's ability to meet OMB's milestones for Y2K renovation, validation, and implementation phases and increases the potential for noncompliant Agency systems on January 1, 2000. Also, contractors may not be held accountable for ensuring Y2K compliance if the requirements

are not incorporated. We recommended that the NASA Chief Information Officer (1) coordinate with the NASA Management Office at the Laboratory to establish a target date(s) for management completion and (2) monitor management's progress in meeting the target date(s). Management concurred with both recommendations.

"Year 2000 Program Oversight of NASA's Production Contractors," Report Number IG-99-004, December 17, 1998. NASA lacked reasonable assurance that its production contractors would provide Y2K-compliant data to support the Agency's key financial and program management activities. This condition occurred because NASA had not asked the two principal Department of Defense audit and contract administration agencies, the Defense Contract Audit Agency and the Defense Contract Management Command, to conduct Y2K reviews at NASA's major contractor locations. As a result, the Agency risks using noncompliant data that may adversely affect the Agency's control, budgeting, program management, and cost accounting activities. We made two recommendations to NASA relating to the Y2K status of its major contractors. Management concurred with the intent of the recommendations and issued a letter to the Defense Contract Audit Agency requesting data on Y2K coverage of the Agency's major contractors. In addition, NASA issued a letter to its Center Procurement Officers instructing them to monitor Y2K problems identified by the Defense Contract Audit Agency.

"Year 2000 Date Conversion – Assessment Phase," Report Number IG-98-040, September 30, 1998. Some NASA Centers did not have documented support for Y2K cost estimates reported to OMB and did not prepare estimates using a consistent methodology. Also, documentation did not always exist to support the manner in which Center assessments and decisions for Y2K compliance were conducted. The audit showed that NASA Centers also needed to improve the sharing of information on the status of Y2K compliance associated with commercial off-the-shelf products. We made three recommendations to assist NASA in addressing the Y2K date conversion problem. Management concurred with the two recommendations concerning documentation for Y2K assessments and the sharing of information on commercial off-the-shelf products. Management did not concur with the recommendation concerning guidance for Y2K cost estimates, stating that adequate guidance on cost estimation had been provided to NASA Centers. This issue remains unresolved.

Appendix C. Report Distribution

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NASA Centers

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Non-NASA Federal Organizations and Individuals

Assistant to the President for Science and Technology Policy
Assistant to the President and Chair, President's Council on Y2K Conversion
Director, Office of Management and Budget
Deputy Director of Management, Office of Management and Budget
Deputy Associate Director, Energy and Science Division, Office of Management and Budget

Appendix C

Non-NASA Federal Organizations and Individuals (Cont.)

Branch Chief, Science and Space Programs Branch, Energy and Science Division, Office of Management and Budget
Associate Director, National Security and International Affairs Division, Defense Acquisition Issues, General Accounting Office
Professional Assistant, Senate Subcommittee on Science, Technology, and Space

Chairman and Ranking Minority Member – Congressional Committees and Subcommittees

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House Subcommittee on Space and Aeronautics, Committee on Science

Congressional Member

Honorable Pete Sessions, U.S. House of Representatives

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Report Title: Final Report on Review of NASA's Year 2000 Day One Planning

Report Number: IG-00-00 **Report Date:** December 00, 1999

Circle the appropriate rating for the following statements.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	N/A
1. The report was clear, readable, and logically organized.	5	4	3	2	1	N/A
2. The report was concise and to the point.	5	4	3	2	1	N/A
3. We effectively communicated the audit objectives, scope, and methodology.	5	4	3	2	1	N/A
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Overall, how would you rate the report?

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Thank you for your cooperation

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