W September 20, 1999

TO: AO/Chief Information Officer

FROM: W/Assistant Inspector General for Auditing

SUBJECT: Final Report on the Audit of NASA's Year 2000 Program – Renovation and Validation Phases
Assignment Number A9901501
Report No. IG-99-034

The subject final report is provided for your information and use. Please refer to the Results in Brief section for the overall audit results. Our evaluation of your comments is incorporated into the body of the report, and individual comments are addressed in Appendix F.

If you have questions concerning the report, please contact Mr. David L. Gandrud, Program Director, Information Technology Program Audits, at (650) 604-2672, or Mr. Roger W. Flann, Audit Program Manager, at (818) 354-9755. We appreciate the courtesies extended to the audit staff. The report distribution is in Appendix G.

[original signed by]

Russell A. Rau

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JPL/180-300/Program Manager

IG-99-034

AUDIT REPORT

NASA'S YEAR 2000 PROGRAM – RENOVATION AND VALIDATION PHASES

September 20, 1999

National Aeronautics and
Space Administration

OFFICE OF INSPECTOR GENERAL

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Acronyms

GAO	General Accounting Office
GSFC	Goddard Space Flight Center
IV&V	Independent Validation and Verification
JPL	Jet Propulsion Laboratory
JSC	Lyndon B. Johnson Space Center
KSC	John F. Kennedy Space Center
LeRC	Lewis Research Center (now the John H. Glenn Research Center at Lewis Field)
MC	Mission-critical
MSFC	George C. Marshall Space Flight Center
NMC	Nonmission-critical
OMB	Office of Management and Budget
Y2K	Year 2000

NASA Office of Inspector General

IG-99-034 **September 20, 1999**
A9901501

NASA's Year 2000 Program – Renovation and Validation Phases

Introduction

The NASA Office of Inspector General performed a review of the Agency's renovation and validation phases at five NASA Centers[1] and the Jet Propulsion Laboratory (JPL). Our objectives were to (1) evaluate the adequacy of NASA's efforts to renovate and validate systems with Year 2000 (Y2K) date problems, (2) evaluate the adequacy of NASA's oversight of contractor renovation and validation activities, and (3) determine whether NASA's Y2K reporting to the Office of Management and Budget (OMB) is accurate and well supported. This report relates to the first and third objectives. Specifically, we evaluated the adequacy of the Agency's Y2K guidelines and requirements (hereafter referred to as "Agency guidelines") and documentation related to its renovation and validation efforts. We also evaluated the accuracy and sufficiency of information NASA provided to OMB on February 15, 1999, for the Y2K renovation and validation activities at the six installations audited. The second objective was addressed in other reports (see Appendix B). Details on our scope and methodology are in Appendix A.

Results in Brief

The Agency guidelines for the renovation and validation phases were generally consistent with General Accounting Office (GAO) guidance for addressing Y2K date conversion problems. Also, for those inventory items reviewed,[2] documented evidence indicated general compliance with the Agency's renovation and validation phase requirements at five of the six locations audited. JPL had generally complied with the renovation and validation phase requirements for nonmission-critical (NMC) systems,[3] but had not progressed sufficiently for us to determine the adequacy of its validation efforts for mission-critical (MC) systems.[4] JPL reported that it had

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[1] Goddard Space Flight Center (GSFC), Lyndon B. Johnson Space Center (JSC), John F. Kennedy Space Center (KSC), John H. Glenn Research Center at Lewis Field (formerly Lewis Research Center (LeRC)), and George C. Marshall Space Flight Center (MSFC).

[2] For installation-level management purposes, each installation divided one or more systems into several discrete inventory items. Accordingly, our sample consisted of entire systems and, in some instances, a limited number of inventory items within systems. To illustrate, Goddard divided its Business and Administrative Applications system, GSFC-1, into 59 discrete inventory items. We limited our review of the GSFC-1 system to 4 of the 59 component inventory items.

[3] Nonmission-critical systems include those that have minimal impact and risk.

[4] Mission-critical systems include those that have high impact or risk, for example, functions affecting safety or human life.

completed the validation test phase on only one of four MC 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.

Background

The 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. Systems that will continue to function properly are designated "Y2K compliant." Systems that are not "Y2K compliant" are at risk of failure and may cause other systems to fail. Y2K compliance is defined in NASA's Year 2000 Test and Certification Guidelines and Requirements as information technology that:

> . . . accurately processes date/time data (including, but not limited to, calculating, comparing, and sequencing) from, into, and between the twentieth and twenty-first centuries, and the years 1999 and 2000 and leap year calculations, to the extent that other information technology, used in combination with the information technology being acquired, properly exchanged date/time data with it.

In January 1997, OMB required all Federal agencies to adopt a five-phase model for implementing the Y2K program. The key elements of each phase, as contained in a GAO guide[5] and the NASA Y2K Program Plan, follow:

- **Awareness.** Defines the date conversion problem, gains executive-level support, and makes everyone aware of Y2K activities.

- **Assessment.** Assesses the impact of the date conversion problem on the organization. Identifies systems with date conversion problems and appropriate remedies.[6]

- **Renovation.** Corrects the date conversion problem by repairing, replacing, or retiring selected platforms, applications, databases, and utilities.

- **Validation.** Tests, verifies, and validates the solution used to correct the date conversion problem.

- **Implementation.** Places the validated items into production.

Our observations follow regarding the Agency guidelines and items reviewed in the renovation and validation phases.

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[5] The GAO guide is entitled, "The Y2K Computing Crisis: An Assessment Guide," dated September 1997.
[6] The NASA Office of Inspector General issued an audit report entitled, "Year 2000 Date Conversion – Assessment Phase," IG-98-040, dated September 30, 1998.

Guidelines for Y2K Renovation and Validation Phases

The Agency guidelines for the renovation and validation phases were generally consistent with GAO guidance for addressing Y2K date conversion problems. The GAO guidance entitled "The Y2K Computing Crisis: An Assessment Guide," issued in September 1997, provided a framework and checklist for assessing the readiness of Federal agencies to achieve Y2K compliance and has been used by Federal agencies as a basis for preparing their own Y2K guidelines. In comparing the "NASA Year 2000 (Y2K) Program Plan," dated June 15, 1998, to the GAO guide, we found that the principal elements described in the GAO guide for the renovation and validation phases were also described in NASA's Y2K Program Plan.

In addition to performing the comparison, we assessed a document entitled the "NASA Year 2000 Agency Test and Certification Guidelines and Requirements," dated July 2, 1998. The document provided basic requirements and guidance to NASA installations for the validation test phase. Nothing came to our attention that would indicate material deficiencies in the document.

Renovation Phase

Documentation regarding the renovation phase showed that the sampled inventory items (MC and NMC) generally complied with the Agency guidelines for the renovation phase at all locations audited

In performing our review, we selected a judgment sample of 47 MC and 53 NMC inventory items (about 5.5 and 5.8 percent, respectively, of total items) that had completed the renovation phase (see Appendix C). We then requested documentary evidence from the installations to help us determine whether they had performed the following key activities, as applicable, in their renovation work:

- Converted applications, databases, archives, and related system components.
- Developed data bridges and filters.
- Replaced applications and related system components.
- Documented code and system changes, and communicated those changes to affected users.
- Retired applications and related system components.

The documentation indicated that the installations had performed the applicable activities and, therefore, had complied with the basic Agency guidelines for the renovation phase.

Validation Phase

Documentation regarding the validation phase showed that the sampled NMC inventory items had generally complied with the Agency's validation phase guidelines at all locations audited. Further, the documentation indicated that the sampled MC inventory items had generally complied with the validation phase guidelines at five of the six locations audited. The sixth

location, JPL, had not yet satisfied the independent validation and verification (IV&V) requirement,[7] as of February 15, 1999, and, therefore, we could not determine the adequacy of JPL's validation efforts for any of its MC inventory items. As of May 6, 1999, JPL reported completion of the required IV&V of test results for one of four MC systems.

We selected a judgment sample of 38 MC and 47 NMC inventory items (about 4.4 and 4.2 percent, respectively, of total items) that had completed the validation phase (see Appendix D). For each sampled item, we requested evidence that would help us determine whether the installations had performed the following key activities, as applicable, in their validation work:

- Developed testing plans and schedules.
- Developed a strategy to manage the testing of contractor-converted systems.
- Implemented a risk-based approach for testing.
- Defined, collected, and used test metrics to manage the testing and validation process.
- Completed unit, integration, and system testing.
- Completed IV&V test processes.
- Documented test results in a test report or completed the Y2K checklist.
- Certified compliance by a NASA employee.
- Used automated test tools and test scripts.
- Initiated acceptance testing.
- Received formal waivers for any variance from Agency requirements.

The documentation indicated that the installations had performed the applicable activities and, therefore, generally complied with the Agency guidelines for the validation phase.

Extent, Quality, and Availability of Documentary Support

The extent, quality, and availability of documentation evidencing NASA's renovation and validation efforts varied significantly by location. On the one hand, documentation at Marshall closely matched the Agency guidelines, was well organized, and was readily available for our review. On the other hand, documentation at JPL was often limited to electronic mail messages stating that a Y2K renovation or validation activity had occurred. While only a minimum of documentary evidence existed at some installations, we were nonetheless able to determine that the evidence was sufficient to meet Agency guidelines.

[7] IV&V of test results is required for MC items only; IV&V is not required for NMC items.

Management's Response

Although the report did not contain recommendations, the CIO took exception to report statements regarding the status of JPL's validation phase and IV&V requirements (see Appendix E).

Evaluation of Management's Response

Our evaluation of the CIO's response is in Appendix F. Where appropriate, we changed the report.

Appendix A. Objectives, Scope, and Methodology

Objectives

Our objectives were to (1) evaluate the adequacy of NASA's efforts to renovate and validate systems with Y2K date problems, (2) evaluate the adequacy of NASA's oversight of contractor renovation and validation activities, and (3) determine whether NASA's Y2K reporting to OMB is accurate and well-supported. This report relates to the first and third objectives. Specifically, we evaluated the adequacy of the Agency's Y2K guidelines and requirements and the documentation related to its renovation and validation efforts. We also evaluated NASA's Y2K reporting to OMB. The second objective was addressed in other reports (see Appendix B).

Scope and Methodology

We performed work at Goddard Space Flight Center, Lyndon B. Johnson Space Center, John F. Kennedy Space Center, John H. Glenn Research Center at Lewis Field (formerly Lewis Research Center), George C. Marshall Space Flight Center, and the Jet Propulsion Laboratory. Specifically, we:

- Coordinated with other NASA Office of Inspector General auditors who were performing work on the Y2K assessment phase to avoid unnecessary duplication of audit effort.

- Interviewed management representatives at NASA Headquarters and installations to determine their Y2K processes and procedures.

- Reviewed guidance issued by OMB, GAO, and NASA and its installations to determine their Y2K processes and procedures and documentation requirements.

- Obtained information regarding Y2K date-sensitive systems and inventory items for the period August 1996 through February 15, 1999, and determined the level of Y2K program completion for those systems and inventory items.

- Judgmentally selected systems and inventory items for review, starting with MC systems or inventory items that had completed the renovation and/or validation phases.

- Reviewed sampled items for compliance with Agency guidelines.

- Reviewed NASA's report to OMB, dated February 15, 1999, for material weaknesses related to the accuracy and adequacy of information being reported for the renovation and validation phases at the six installations audited.

- Coordinated with the Air Force Audit Agency on audit methodology.

Appendix A

Management Controls

We reviewed Agency guidelines and requirements related to the renovation and validation phases to determine applicable requirements. The requirements, or controls, were then tested against the sampled systems and inventory items to determine whether the installations had complied with these requirements. The controls generally were adequate.

Audit Field Work

We performed the audit field work for this report from August 1998 through April 1999. We conducted the review in accordance with generally accepted government auditing standards.

Appendix B. Summary of Prior Coverage

The NASA Office of Inspector General has issued four reports relating to Y2K. The reports are summarized below. Copies of the report are available at http://www.hq.nasa.gov/office/oig/hq/issuedaudits.html.

"**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, JPL had not included the NASA-directed requirements in all its applicable information technology operation and maintenance contracts as of January 31, 1999. JPL 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 JPL to establish a target date(s) for JPL completion and (2) monitor JPL's progress in meeting the target date(s). Management concurred with both recommendations. Corrective action was completed on the first recommendation and is pending on the second.

"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. Sample of Renovated Inventory Items

The table below shows the number of sampled inventory items relative to the universe of items subject to renovation activities at each installation.

Inventory Items Subject to Renovation and Number of Items Sampled

Installation[1]	Items Subject to Renovation[2]		Items Sampled		Percent Sampled	
	MC	NMC	MC	NMC	MC	NMC
GSFC	176	33	12	0	6.8	0.0
JPL	472	539	8	20	1.7	3.7
JSC	168	83	5	17	3.0	20.5
KSC	9	147	6	9	67.0	6.1
LeRC	6	63	3	7	50.0	11.1
MSFC	26	50	13	0	50.0	0.0
Totals	857	915	47	53	5.5	5.8

[1] Goddard Space Flight Center (GSFC), Jet Propulsion Laboratory (JPL), Lyndon B. Johnson Space Center (JSC), John F. Kennedy Space Center (KSC), John H. Glenn Research Center at Lewis Field (formerly Lewis Research Center (LeRC)), and George C. Marshall Space Flight Center (MSFC).

[2] The number of items subject to renovation was not always fully and consistently developed and maintained at each Center. In those cases, we conservatively estimated the number of items based on available information.

Appendix D. Sample of Validated Inventory Items

The table below shows the number of sampled inventory items relative to the universe of items subject to validation activities at each installation.

Inventory Items Subject to Validation and Number of Items Sampled

Installation	**Items Subject to Validation***		**Items Sampled**		**Percent Sampled**	
	MC	NMC	MC	NMC	MC	NMC
GSFC	176	33	7	0	4.0	0.0
JPL	472	539	0	17	0.0	3.2
JSC	168	83	5	17	3.0	20.5
KSC	10	147	7	9	70.0	6.1
LeRC	6	63	2	4	33.0	6.3
MSFC	34	252	17	0	50.0	0.0
Totals	866	1,117	38	47	4.4	4.2

* The number of items subject to renovation was not always fully and consistently developed and maintained at each Center. In those cases, we conservatively estimated the number of items based on available information.

Appendix E. – Management's Response

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

JUL 15 1999

TO: W/Inspector General

FROM: AO/Chief Information Officer

SUBJECT: NASA Response to Draft Report on Audit of NASA's Year 2000 Program, Renovation and Validation Phases, Audit Assignment A9901501

This responds to your draft report on the Audit of NASA's Year 2000 Program, Renovation and Validation Phases, under Audit Assignment Number A9901501.

The referenced report contains no recommendations for corrective actions requiring a NASA response. However, within the report, there are two statements regarding status of the Jet Propulsion Laboratory (JPL) that are not accurate. These statements describe JPL's status relative to validation mission critical systems and independent verification and validation of test processes. We request that the draft report be revised to reflect JPL status, as follows:

1. Delete the phrase on page 1: " . . . but had not progressed sufficiently for us to determine the adequacy of its validation efforts for mission-critical (MC) systems." — See Appendix F, OIG Comment 1
2. Change the sentence on page 1 to read: "JPL reported that it had completed the validation phase of the four MC systems. — OIG Comment 2
3. Delete the sentence on page 2: "NASA was aware of this problem and is taking appropriate action." — OIG Comment 3
4. Change the statement on page six to read: " The sixth location, JPL, had satisfied the validation testing requirement, as of February 15, 1999. As of May 6, 1999, JPL reported completion of the required independent validation and verification of the test process for one of four MC systems." — OIG Comment 4
5. Delete Footnote 7 on page 4. — OIG Comment 5

The rationale for requesting these changes to the draft report are provided in the following paragraphs.

The first inaccurate statement is on page 1 of the report, " JPL had generally complied with the renovation and validation phase requirements for nonmission-critical (NMC) systems, but had not progressed sufficiently for us to determine the adequacy of its validation efforts for mission-critical (MC) systems." JPL provided all requested information on the validation of the four mission critical systems to the site auditor by February 15, 1999. Moreover, the validation, i.e., testing, of the mission critical systems was completed as follows:

TOPEX/Poseidon Ground System (JPL-1)	1998-12-31
Deep Space Mission System (JPL-2)	Most items validated before 1999-01-31
Institutional Network Infrastructure (JPL-3)	1997-03-01
Institutional Business Systems (JPL-4)	1998-12-31

The second inaccurate statement is on page 3. It reads, " The sixth location, JPL, had not yet satisfied the independent verification and validation testing requirement[7], as of February 15, 1999, and, therefore, we could not determine the adequacy of JPL's validation efforts for any of its MC inventory items. As of May 6, 1999, JPL reported completion of the required validation testing for one of four MC systems." The footnote associated with this statement, found on page 4 of the draft report, is also inaccurate. It reads, "[7] Independent verification and validation testing is required for MC items only; the testing is not required for NMC items."

See Appendix F, OIG Comment 4

See Appendix F, OIG Comment 5

The requirement stated by the OIG for independent verification and validation testing of mission critical systems may reflect an incorrect interpretation of NASA requirements. NASA's Year 2000 Agency Test and Certification Guidelines and Requirements (July 2, 1998), states the requirement for independent validation and verification associated with Y2K test processes, as follows:

" 2.4 **Independent Validation and Verification**. Test processes must include an independent validation and verification of test results for mission critical systems. Independent validation and verification may be performed by any individual(s) independent of the developer or certifying individual. Centers should use quality assurance groups or validation and verification agents where practical to ensure consistency and quality of test processes and results."

In addition, NASA requires that inventory items be certified, as follows:

"2.2.2.3 **Certification** –All tested inventory items must be certified by a NASA employee. Appendix A-2 provides sample certification forms. The content and level of detail for certification may vary based on Center requirements and the nature of the inventory. Centers may elect to require additional signatures, including contractors responsible for operations and maintenance of inventory items, as required."

JPL provided information on the status of both the validation, i.e., testing, and the independent validation and verification of the test process to the OIG auditor, as requested. As previously stated, the validation, i.e., testing, of the four JPL mission critical systems was complete by February 15, 1999. The independent validation and verification of the test process was complete on one mission critical system as of May 6, 1999.

Please revise the draft report to make these corrections. We consider this action closed with this response.

Lee Holcomb

cc:
AO/A. Norris
AO/C. Simonson
S/J. Bredekamp
JPL/R. Matheson

Appendix F. OIG Comments on Management's Response

The Chief Information Officer took exception to several statements in the audit report regarding JPL's validation phase status and the independent verification and validation requirements. Each of the requested changes to the report are listed below, followed by the Office of Inspector General (OIG) responses.

Management's Comment. Delete the phrase on page 1: " . . . but had not progressed sufficiently for us to determine the adequacy of its validation efforts for mission-critical (MC) systems."

1. OIG Comments. The evidence does not support deletion. As of February 15, 1999, JPL had not completed the IV&V requirement for any of its four MC systems. According to the NASA Y2K test and certification guideline requirements, "the objectives of the validation phase are to uncover errors introduced during the renovation phase, and verify the operational readiness of inventory items." The guideline also states that the validation phase must include an IV&V of test results for MC systems and that the IV&V may be performed by any individual(s) independent of the developer or certifying individual. JPL had not completed the IV&V requirement of the validation phase and, therefore, we could not determine the adequacy of its validation efforts for MC systems. The other five installations audited had completed the IV&V requirement for the validation phase.

Management's Comment. Change the sentence on page 1 to read: "JPL reported that it had completed the validation phase of the four MC systems."

2. OIG Comments. For the reasons stated in OIG Comment 1, we did not change the sentence. Before issuing our draft report, we asked JPL about the status of its IV&V efforts for the four MC systems. JPL informed us that, as of May 6, 1999, it had completed the IV&V requirement for one of the four MC systems. The Chief Information Officer reaffirmed such status in his response to the draft report.

Management's Comment. Delete the sentence on Page 2: "NASA was aware of this problem and is taking appropriate action."

3. OIG Comments. We deleted the sentence.

Management's Comment. Change the statement on page 3 to read: "The sixth location, JPL, had satisfied the <u>validation testing</u> requirement, as of February 15, 1999. As of May 6, 1999, JPL reported completion of the required independent validation and verification of the test process for one of four MC systems."

4. OIG Comments. For the reasons stated in OIG Comment 1, we did not change the referenced sentence.

Management's Comment. Delete Footnote 7 on page 4.

5. OIG Comments. The footnote now states "IV&V of test results is required for MC items only; IV&V is not required for NMC items."

Appendix G. Report Distribution

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Director, George C. Marshall Space Flight Center
Director, NASA Management Office, Jet Propulsion Laboratory

Appendix G

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

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House Subcommittee on VA, HUD, and Independent Agencies
House Committee on Government Reform and Oversight
House Subcommittee on National Security, Veterans Affairs, and International Relations
House Committee on Science
House Subcommittee on Space and Aeronautics

Congressional Member

Honorable Pete Sessions, U.S. House of Representatives

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