

IG-00-020

**AUDIT
REPORT**

**VALIDATING FY 1999 PERFORMANCE
DATA TO BE REPORTED UNDER THE
GOVERNMENT PERFORMANCE
RESULTS ACT (GPRA)**

March 28, 2000



National Aeronautics and
Space Administration

OFFICE OF INSPECTOR GENERAL

Additional Copies

To obtain additional copies of this report, contact the Assistant Inspector General for Auditing at (202) 358-1232.

Suggestions for Future Audits

To suggest ideas for or to request future audits contact the Assistant Inspector General for Auditing. Ideas and requests can also be mailed to:

Assistant Inspector General for Auditing
Code W
NASA Headquarters
Washington, DC 20546-0001

NASA Hotline

To report fraud, waste, abuse, or mismanagement, contact the NASA OIG Hotline at (800) 424-9183, (800) 535-8134 (TDD), or at www.hq.nasa.gov/office/oig/hq/hotline.html#form; or write to the NASA Inspector General, P.O. Box 23089, L'Enfant Plaza Station, Washington, DC 20026. The identity of each writer and caller can be kept confidential, upon request, to the extent permitted by law.

Acronyms

CFO	Chief Financial Officer
FY	Fiscal Year
GAO	General Accounting Office
GPRA	Government Performance Results Act
IT	Information Technology
NACC	NASA Automated Data Processing (ADP) Consolidation Center
NISN	NASA Information Systems Network
OIG	Office of Inspector General
OLMSA	Office of Life and Microgravity Sciences and Applications
OMB	Office of Management and Budget
PBC	Performance-Based Contract

W

March 28, 2000

TO: A/Administrator

FROM: W/Inspector General

SUBJECT: INFORMATION: Validating FY 1999 Performance Data To Be Reported Under the Government Performance Results Act (GPRA)
Report Number IG-00-020

The NASA Office of Inspector General has completed an audit of the accuracy and reliability of performance data for selected FY 1999 GPRA performance targets in the Agency's Performance Report. We performed the audit in response to a request by congressional leaders to assess Agency controls for ensuring that the underlying performance data (in the Agency's annual Performance Report) are accurate and reliable. The annual Performance Report is an important document that NASA, Congress, and the Office of Management and Budget will use to assess NASA's overall performance and make decisions on programs and funding levels. We concluded that supporting data and information on 18 of 23 performance targets reviewed were adequate, and we did not identify any significant problems with reported actual performance for those targets. However, the reported performance on five targets reviewed was not fully reliable because the supporting data did not accurately support the results described. Reporting performance results that are not fully reliable limits the usefulness of the Performance Report to NASA, OMB, and the Congress. Although NASA had taken some steps to validate performance information that will go into the annual Performance Report, the process could be further improved.

Background

GPRA was enacted in 1993 to improve public confidence in the Federal Government by holding agencies accountable through setting program goals, measuring performance against those goals, and reporting publicly on progress. Each agency is required to prepare a Strategic Plan, an annual Performance Plan, and an annual Performance Report. NASA issued its Strategic Plan in 1997 and issued a Performance Plan for FY 1999 as required by GPRA. At the time we performed the audit, NASA was in the process of collecting data and preparing its first Performance Report covering FY 1999.

NASA's Office of Policy and Plans is responsible for developing and implementing the Strategic Plan. The Office of the Chief Financial Officer (CFO) is responsible for developing and implementing the annual Performance Plan and for preparing the annual Performance Report.

NASA Centers are responsible for implementing many of the programs and activities for which the performance goals and targets have been established. Therefore, much of the data used to measure and evaluate actual performance either were provided by Center offices or came from systems into which the Centers enter the data. For most of the targets we reviewed, the Headquarters offices responsible for the program or activity had collected the data from the Centers or systems, developed a written assessment of the actual performance, and submitted that assessment to the CFO for use in preparing the Performance Report. We evaluated those assessments and the supporting information during the audit.

The FY 1999 Performance Plan contained a total of 145 performance targets to achieve the established goals and objectives. We reviewed 23 targets that related to 3 critical areas: Procurement, Information Technology, and Safety and Mission Assurance.

Recommendations, Management's Response, and OIG Evaluation

We recommended that the CFO establish policies to ensure (1) that all targets in the annual Performance Plan are clear and specific and can be accurately measured and reported and (2) that the program offices effectively validate and certify supporting data and reported final results prior to submitting them for the annual Performance Report. We also recommended that the CFO review and correct information on the five targets discussed in our report, and the other FY 1999 targets not audited, to ensure all reported results in the Performance Report are accurate and reliable.

Management concurred with the recommendations. The Office of the CFO stated that it has developed instructions to be followed in the development of plans and Performance Reports. Additionally, guidance will be included in the annual budget guidance, and quarterly reviews of progress will be required. Regarding accuracy of the FY 1999 results, the Office of the CFO stated that the five targets discussed in the audit report had been addressed and corrected and that NASA offices had been requested to confirm that they validated all their inputs for the FY 1999 Performance Report.

Management's proposed actions are responsive. However, we encourage management to consider adding guidance on developing and validating performance measures in the Strategic Management Handbook for all NASA offices to follow. Although we believe this additional action would be beneficial, we accept management's proposed actions and will monitor their effectiveness in future GPRA-related audits. Details on the status of the recommendations are in the recommendations section of the report.

[Original signed by]

Roberta L. Gross

Enclosure

Final Report on Audit of Validating FY 1999 Performance Data
To Be Reported Under the Government Performance Results Act

FINAL REPORT
VALIDATING FY 1999 PERFORMANCE DATA TO BE REPORTED
UNDER THE GOVERNMENT PERFORMANCE RESULTS ACT (GPRA)

W

March 28, 2000

TO: B/Chief Financial Officer

FROM: W/Assistant Inspector General for Auditing

SUBJECT: Final Report on the Audit of Validating FY 1999 Performance Data To Be Reported Under the Government Performance Results Act (GPRA)
Assignment Number A0000500
Report Number IG-00-020

The subject final report is provided for your use. Our evaluation of your response is incorporated into the body of the report. The comments and planned actions on the three recommendations are considered responsive. However, NASA management should take the additional steps discussed in the report to fully resolve the issues related to the GPRA. Although we advocate taking the additional actions described, we accept proposed actions on the recommendations and will monitor their effectiveness in future GPRA-related audit work. Accordingly, all recommendations are considered closed for reporting purposes with issuance of this report.

If you have questions concerning the report, please contact Mr. Chester A. Sipssock, Program Director, Environmental and Financial Management Audits, at (216) 433-8960, or Mr. Richard Dix, Program Manager, at (301) 286-8525. We appreciate the courtesies extended to the audit staff while performing the audit. See Appendix E for the report distribution.

[Original signed by]

Russell A. Rau

cc:

B/Chief Financial Officer

B/Comptroller

G/General Counsel

Z/Senior Advisor for Strategic Planning

BF/Director, Financial Management Division

BR/Director, Resources Management Division

JM/Director, Management Assessment Division

bcc:

B/Audit Liaison Representative

Z/Audit Liaison Representative

W/C. Sipsock

R. Dix

NASA Office of Inspector General

IG-00-020
A0000500

March 28, 2000

Validating FY 1999 Performance Data To Be Reported Under the Government Performance Results Act (GPRA)¹

Introduction

The NASA Office of Inspector General (OIG) has conducted an audit of data supporting the Agency's actual results on selected performance targets² in the fiscal year (FY) 1999 GPRA Performance Plan. The audit was performed in response to a congressional request³ to assess Agency controls for ensuring that the underlying performance data (in the Agency's annual Performance Report) are accurate and reliable. The FY 1999 Performance Plan contained a total of 145 performance targets to achieve the various goals and objectives established for Agency programs and activities. We reviewed 23 targets that related to 3 critical areas. Those areas were Procurement, Information Technology, and Safety and Mission Assurance. Appendix A contains further details on the audit objective, scope, and methodology. Appendix B provides details on the 23 targets reviewed.

GPRA was enacted in 1993 to improve public confidence in the capability of the Federal Government by systematically holding Federal agencies accountable for achieving program results. GPRA requires this to be accomplished through setting program goals, measuring program performance against those goals, and reporting publicly on progress. Specifically, Federal agencies are required to:

- Develop periodic strategic plans, setting forth the Agency's mission and general goals and objectives. The initial Strategic Plan, required by the Congress no later than September 30, 1997, was to cover a period of not less than 5 years forward from the fiscal year in which it was submitted, or 2002. An updated Strategic Plan must be submitted every 3 years thereafter.
- Prepare and submit to the Director of the Office of Management and Budget and the Congress an annual Performance Plan, beginning with FY 1999. The plan should establish objective and measurable performance goals, establish performance indicators to be used in

¹ This act is contained in Public Law 103-62.

² Performance target is the term NASA uses in the Performance Plan for those measures or metrics that were established to accomplish (and measure) the individual goals and objectives. Target, as used in this report, generally equates to the terms "measure" or "indicator" as used in the GPRA.

³ An October 1998 letter signed by the House Majority Leader and Chairmen of the House Committee on Government Reform and Oversight; the House Subcommittee on Government Management, Information, and Technology; and the Results Caucus requested the NASA OIG to establish a GPRA review plan to assess Agency controls. In response to the request, a plan was included in the OIG Semiannual Report for March 31, 1999.

measuring

relevant outputs or other results, provide a basis for comparing actual results with the established goals, and describe the means to be used to verify and validate measured values.

- Prepare and submit to the President and the Congress an annual Performance Report that describes actual program performance in the previous fiscal year. The report is required to set forth the performance indicators established in the annual Performance Plan and compare planned with actual performance. The report should also describe actions that will be taken on performance goals that are not met and summarize findings of program evaluations completed during the fiscal year. The first performance report is required to be issued by March 31, 2000, covering results for FY 1999.

Results in Brief

We considered the supporting data and information on 18 (78 percent) of the 23 performance targets reviewed to be adequate and did not identify any significant problems with reported actual performance. However, we did not consider the reported performance⁴ on five targets to be fully reliable because the data reviewed did not accurately support the results being described. Based on the results of our audit, we cannot project but can surmise that other targets may also have inaccurate supporting data and reported results. NASA could improve the accuracy of the FY 1999 Performance Report by more effectively validating the supporting data and by developing clearer, more specific targets. This would increase the Performance Report's value as a source of information for making important program and funding decisions.

Background

NASA issued its Strategic Plan in 1997 and must update it for FY 2000. The FY 1999 Performance Plan, updated in February 1999, provided near-term goals for each of the Agency's four business enterprises⁵ and at least one performance target to help achieve each of the goals. The Performance Plan also included goals and targets for several internal processes that have Agency-wide impact and are referred to as "crosscutting" processes.⁶ At the time we performed the audit, NASA was in the process of collecting data and preparing its first Performance Report. The annual Performance Report is an important document that NASA, Congress, and OMB will use to assess NASA's overall performance and make decisions on programs and funding levels.

Under current internal agreements, NASA's Office of Policy and Plans is responsible for developing and implementing the Strategic Plan, and the Office of the Chief Financial Officer (CFO) is responsible for developing and implementing the annual Performance Plan and for

⁴ For purposes of our review and this report, the terms "reported performance" and "reported results" are the same and refer to the written evaluation of actual results prepared by the program and staff offices and provided to the Chief Financial Officer for the Performance Report.

⁵ The four enterprises are (1) Space Science (2) Earth Science (3) Human Exploration and Development of Space, and (4) Aero-Space Technology.

⁶ The Performance Plan identifies crosscutting processes as "Managing Strategically," "Providing Aerospace Products and Capabilities," "Generating Knowledge," and "Communicating Knowledge."

preparing the annual Performance Report. Although the Office of Policy and Plans had issued guidance on the overall strategic planning and implementation process,⁷ the CFO had not issued formal guidance on specific aspects of developing, measuring, and reporting performance under the Performance Plan and Performance Report.

NASA Centers are responsible for implementing many of the programs and activities for which the performance goals and targets have been established. Therefore, most of the data used to measure and evaluate actual performance on targets we reviewed either were provided by Center offices or came from systems into which the Centers enter the data. For the FY 1999 performance results on targets we reviewed, the Headquarters program and staff offices generally collected the data from the Centers (or systems), developed a written assessment of the actual performance, and submitted that assessment to the CFO for use in preparing the Performance Report. The process also included discussing the results with senior managers and the NASA Advisory Council.⁸

Reliability of Data for Reported Results

Finding. Five (22 percent) of 23 performance targets reviewed had written assessments of performance prepared by the program and staff offices that did not accurately reflect supporting data and actual results. This was because effective procedures were not in place to verify and validate supporting data and the results. Also contributing to the problems were poor phrasing of some targets and a general lack of formal guidance for preparing and reporting performance targets. The planned reported performance on these five targets is, therefore, not fully reliable which may limit the usefulness of this information to NASA, Office of Management and Budget (OMB), and the Congress for decision-making. Reported performance for some of the 122 targets not reviewed may also not be fully reliable for the same reasons. Management attention is needed to address and correct this problem before issuing the Performance Report.

Verifying Supporting Data and Results

For the annual Performance Report to be useful, the data on the actual achievements on the Agency's performance goals and targets, and the comparisons of planned and actual performance, must be accurate.⁹ GPRA requires the annual Performance Plan to include a description of the means used to verify and validate measured values. Also, to have accurate measurements of actual performance, it is important that the targets are described in the Plan in a manner that ensures the planned achievements, and how they are measured, are clear.

NASA's FY 1999 Performance Plan described, as required by GPRA, the means by which the Agency would verify its performance data. The primary means were reviews by internal and

⁷ NASA Strategic Management Handbook, October, 1996.

⁸ The Council, composed of outside experts chosen by NASA, and its committees provide advice and counsel directly to the Administrator.

⁹ NASA also includes selected performance information in an Accountability Report that is issued as part of the annual Financial Statements. We discussed with CFO staff our audit findings on specific targets that were also going to be included in the 1999 Accountability Report so the CFO staff could take appropriate action.

external groups such as the OIG, the General Accounting Office (GAO), and the NASA Advisory Council. In its review of the 1999 Plan, GAO identified a weakness in the Plan in that it

does not discuss limitations on data, particularly from external sources, that would be used. We noted in an earlier audit that the Agency lacked specific procedures for NASA program offices to follow in verifying performance data and reported results.¹⁰ NASA management took the position that most of the data used to measure GPRA-related performance came from internal sources, thus additional procedures were not necessary to ensure accuracy and reliability.

For 18 of the 23 targets reviewed, we did not find any significant problems with the actual performance that was reported by the program and staff offices. Except for minor errors, the supporting data and manner in which actual results were reported were generally adequate. However, as evidenced by the five targets discussed below, there could be further improvement in the overall process for reviewing and validating all GPRA performance data and reported results. The five targets are also good examples of targets with data limitations or special circumstances that should be discussed in the annual Performance Report, as recommended by the GAO. Each of the five targets for which we had concerns about accuracy and reliability of reported results is discussed below.

Target H-18: “Achieve a 60 percent increase in the predicted reliability of the Space Shuttle over 1995.” This target relates to a program managed by the Office of Space Flight. NASA plans to report that it achieved a 60-percent increase over 1995.¹¹ In reviewing data on this target, we were concerned about the accuracy and reliability of the reported results primarily due to questions about the quantitative models that generated the data on which the reported results were based. However, we also were concerned about the phrasing of the target and the incorrect impression the reported results could give to someone outside NASA and the program office.

In reviewing the target and results, we determined that reported performance was based on data derived from quantitative models operated by Marshall Space Flight Center that related only to the Shuttle engines and not the entire Shuttle. The models are complex and use various data such as flight and test data, probabilistic structural models, similarity analysis, and engineering judgment and assumptions to quantitatively derive a predicted risk of a certain event. During our audit, a team of Shuttle and quantitative analysis experts assessed these models to provide input into NASA’s overall effort to improve its risk assessment capabilities.¹² The team’s report raised a number of questions about the Marshall models (and the Johnson models) and concluded that the (model) analyses and results were not sufficient to be used for decision support without

¹⁰ More details on these reviews are provided in Appendix C.

¹¹ Specifically, the Shuttle Management Office stated the improvement was “from 1/248 to 1/438 median probability on ascent” meaning that the probability of catastrophic failure during launch ascent went from 1 in 248 to 1 in 438 chances. These predicted probabilities came from automated models that used quantitative techniques to make the calculations.

¹² This review team was composed of experts from outside NASA and performed its work for the Office of Safety and Mission Assurance under Task 2.1 on NASA contract NASW-99010. The team evaluated both the Marshall models on the Shuttle external propulsion systems and the Johnson models used on the Shuttle orbiter. The team provided NASA a report in January 2000. Among the problems cited with the models were that all the needed data were not being gathered and used and that the treatment of uncertainties was generally insufficient.

additional Shuttle design and operational insights. Based on the questions raised in the review team, we believe the reported results on this target are not fully reliable and that the circumstances should be discussed in the Performance Report. The limitations of these models and the data they provide are good examples of the type of information that should be explained in the Performance Report as recommended by the GAO.

In addition to the data issues discussed above, the phrasing of the target contributes to problems in accurately reporting performance. The target implies a degree of reliability of the *entire* Shuttle system which includes the Orbiter, the engines, and the external tank. However, the measured and reported performance we reviewed involved only improvements made to the Shuttle engines and the impact these changes had on the predicted probability of a catastrophic failure during launch ascent. Although an improvement in engine reliability adds to overall Shuttle reliability, the amount of increase for the engines does not equate to the same level of increase for the overall Shuttle system as the target and reported information implied. If the target had been worded more precisely to reflect that the planned increased reliability related to engine improvements, the data and reported results would have been more consistent and accurate. NASA officials who approve the annual Performance Plan should ensure targets are clearly stated and reflect what will be measured and reported.

Target Y-33: “Complete solicitation for at least seven cooperative agreements with state and local governments in land use planning, land capability analysis, critical areas management, and water resources management.” This target relates to programs managed by the Office of Earth Science. NASA plans to report that: (a) 11 cooperative agreements were established with state and local governments; (b) the projects involve about 20 state agencies and 15 regional or county-level agencies; and (c) the research is generally led by university scientists partnering with regional, state, and local agency partners. In reviewing the target, we determined that the supporting data was not consistent with the reported results and that the information on this target in the FY 1999 Performance Report is not accurate and reliable.

To verify the reported information, we requested documentation for the 11 cooperative agreements that were cited. The data we received reflected that four formal cooperative agreements had been established and that only one of them¹³ was with a state or local government as described in the target and performance assessment. The three other cooperative agreements were with universities or other organizations. The remaining seven projects were grants, not cooperative agreements, and six of the grants were with universities rather than state and local governments as described in the target.

Cooperative agreements and grants differ,¹⁴ both in their nature as well as use, and the two terms are not meant to be used interchangeably. Therefore, the reported performance on this target that 11 cooperative agreements had been established was not accurate. It was additionally misleading to state that all the “projects,” whether grants or agreements, had been established with state and local governments when the supporting information indicated otherwise. We could not determine exactly

¹³ Agreement NCC5-313 with the Resources Agency of California.

¹⁴ Both are a means NASA uses to support research. However, agreements are used when NASA participates in the performance of the effort, whereas a grant is used to support effort primarily accomplished by the other party such as a university, state, or other organization.

why actual performance was described inaccurately. Because the individuals who prepared the initial assessment stated that the final reported results were phrased differently from what was submitted, we believe the Headquarters Performance Report editing process may be part of the problem. Nevertheless, this example supports the need for better verification and validation of the data and information that will be included in the Performance Report.

Target MS-8: “Improve information technology (IT) infrastructure service delivery to provide increased capability and efficiency while maintaining both a customer rating of “satisfactory” and costs per resource unit at the FY 1998 baseline.” This target was one of the crosscutting performance targets in the FY 1999 Performance Plan that affects operations Agency-wide. The target relates to a program area managed by the Agency’s Chief Information Officer. NASA plans to report that it achieved the target performance. In reviewing this target, we identified an inconsistency between how the target was worded and how actual performance was being measured and reported. Therefore, we do not consider the reported assessment to be completely reliable.

The data used to measure and report actual performance related to only two major NASA IT components: (a) the NASA Information System Network (NISN) and (b) the NASA Automatic Data Processing Consolidation Center (NACC).¹⁵ Although these two components are large and have Agency-wide impact, they do not represent NASA’s entire IT infrastructure. There are many other systems and IT services that also are part of NASA’s total IT infrastructure. For example, NASA’s Information Management 5-year Plan lists about 50 IT systems and activities that make up the infrastructure, including the Numerical Aerodynamic Simulation facility, the Shuttle Management Planning and Tracking System, and the NASA Equipment Management System.

The data we reviewed, including customer survey results and operating unit costs, reasonably supported a conclusion that the target had been met for NISN and NACC. However, the reported results we reviewed did not explain that the performance related to only the NISN and NACC. Rather, the stated performance was “[NASA] substantially improved performance of Agency-wide IT support while maintaining customer ratings of satisfied to very satisfied and holding (or reducing) costs per resource unit to the FY 1998 baseline.” Reporting performance on this target in that manner in the annual Performance Plan would give an inaccurate impression that IT services throughout the Agency have been improved while costs and customer satisfaction have been maintained. Although the actual performance attained is noteworthy, this target demonstrates the need for NASA to more precisely word GPRA performance targets and to effectively validate data on actual results to ensure they are accurately reported.

¹⁵ The NISN is essentially a communications network that includes a number of different services such as video teleconferencing, mission operations for flight projects, and dedicated data links. The NACC is a consolidation of several administrative computing systems, such as payroll and personnel, operated at the Marshall Space Flight Center.

Target MS-6: “Increase obligated funds available for performance-based contracts (PBC) to 80 percent.”¹⁶ This target is another crosscutting performance target that affects operations Agency-wide. NASA planned to report it had increased its performance-based contract obligations to 80 percent of funds available for such contracts. In reviewing this target, we concluded the reported results were not fully reliable due to uncertainties about the accuracy of data on contracts being coded as PBC. Therefore, performance results for this target in the FY 1999 Performance Report need to be qualified to explain the possible error in the measured data.

PBC is a relatively new approach for procuring goods and services within NASA and the Federal Government. Basically, the Government describes what needs to be done or provided, and the contractor decides how best to accomplish it and is reimbursed based on how well that is done. Because performance-based contracting is a new process, Agency personnel are still learning about what PBC’s are and when and how to use them. To help monitor PBC implementation, NASA has included an evaluation of this area in its procurement system reviews.¹⁷ Also a PBC Assessment Team was created to specifically evaluate PBC efforts at NASA Centers. One of the steps taken by the PBC team in reviewing sample contracts was to ensure they been correctly designated as a PBC.

To validate supporting data and reported results on this target we examined the results of the Center reviews (discussed in the previous paragraph) where the PBC was evaluated. The completed Center reviews we examined indicated that some contracts were not correctly designated as PBC’s. For example, a recent review by the PBC team determined that 2 of 13 sample contracts at Ames Research Center were not coded correctly and at Dryden Flight Research Center, 2 of 9 sampled contracts were not coded correctly as PBC’s. Statistical sampling is not used in these Center reviews, so neither those results nor our audit work accurately identify the extent of errors in the procurement information system due to incorrect PBC coding. However, as the Center reviews indicate, errors in coding exist.

Until these errors can be eliminated or accurately identified, the reliability of reported data on the number or dollar value of PBC’s must be considered questionable and should be qualified accordingly. NASA should explain the possible margin of error in the measured results for this target in the Performance Report. As with the other targets discussed in this report, this example supports the need for NASA to better validate and explain the data and reported results on targets before including them in the annual Performance Report.

Target H-1: “Support an expanded research program of approximately 800 investigations, an increase of about 9 percent over FY 1998.” This target relates to research managed by the Headquarters Office of Life and Microgravity Sciences and Applications (OLMSA). An investigation is a research project or task that is funded by NASA through one of several methods such as a grant, a

¹⁶ For the target, funds available for PBC’s exclude grants; cooperative agreement actions under \$100,000; Small Business Innovation Research; Small Business Technology Transfer Research; Federally-Funded Research and Development Centers; intra-governmental agreements; and contracts with foreign governments or international organizations.

¹⁷ These reviews are performed at all Centers and include evaluations of many procurement aspects such as pricing, competition, and contract administration.

Science Institute or Center, or Commercial Space Center. NASA initially planned to report that 877 investigations were supported during FY 1999. In reviewing data supporting the results, we questioned the accuracy of the figure reported. As discussed below, NASA subsequently reevaluated the data and revised the reported number of supported investigations.

The data supporting the 877 reported investigations came from reports provided to Headquarters by the three Centers who primarily provide support for this research—Ames Research Center, Johnson Space Center, and Marshall Space Flight Center. The senior resources manager in OLMSA told us that the reported performance figure was intended to include only investigations that (a) received some funding in FY 1999 and (b) involved research selected through a “peer review” process.¹⁸ In verifying the reported results, we reviewed the Johnson reported data and discussed it with individuals at the Center and at Headquarters. The report showed that all the projects included in the Johnson total had received FY 1999 funding. We randomly selected five projects from the Johnson report to examine documentation that would verify that the investigations included in the Johnson total also had been selected by a peer review process. Two¹⁹ of the five did not have documentation because they had not been peer reviewed. Rather, they were just two projects that received funding and were tracked on this particular report. A project scientist at NASA Headquarters familiar with these projects also stated that they were not peer-review-type projects. These errors raised questions about the reliability of the reported 877 investigations.

To try to identify the cause of this problem, we reviewed the instructions OLMSA issued to the Centers for requesting data on this target. The instructions discussed the need to include only investigations that received funding in FY 1999 but did not discuss the need to omit projects that were not peer reviewed. Omitting this important criteria from the instructions, in our opinion, contributed to some investigations being inadvertently included in the reported data. Our limited audit scope did not permit additional work to identify the full extent of the errors in the reports from all three Centers. However, as a result of our questions on this matter, NASA reevaluated the data on this target and revised the reported results to show that 872 investigations were supported. We commend OLMSA managers for taking this prompt action but believe the initial errors that the audit identified reflect a need to improve the current verification and validation procedures to ensure the performance assessments and supporting data are accurate and reliable.

Conclusions

NASA has just completed the first cycle of developing and using a Performance Plan and is currently preparing the first required Performance Report. Therefore, the Agency is still learning how to effectively implement GPRA and measure performance under the Act’s requirements. As discussed in this report, NASA’s GPRA performance measurement process has some weak areas. Specifically, what the performance targets say and what is being measured and reported are not always consistent. Also, the performance assessments and supporting data for some performance targets are not being adequately verified and validated. Management actions are needed to take

¹⁸ A process in which a panel of qualified people, not involved with the project, review the proposed research to determine if it is appropriate for funding and supporting.

¹⁹ One investigation involved providing research facility time (simulating space radiation) to an investigator and the other involved general support for a U.S.-Russian Space Technology program.

advantage of these lessons learned and ensure that all the information in the annual Performance Plans and Reports is reliable and useful in decision-making.

Recommendations, Management's Response, and Evaluation of Response

The Chief Financial Officer should:

- 1. Establish policy for the program and other offices to use in developing performance targets for the annual Performance Plan, and participate in the development process to ensure that all targets are clear and specific, and can be accurately measured and reported.**

Management's Response. Concur. The Office of the CFO has developed Office Work Instructions, HOWI17410-B001 and HOWI17410-B003, to be followed in the development of Performance Plans and Reports. A number of Headquarters offices have developed similar work procedures for these processes that will be going through or have been through ISO certification. These work instructions will be issued, along with guidance that will be issued as a part of the annual budget guidance and supporting directions relative to reporting requirements. The complete text of management's response is in Appendix D.

Evaluation of Management's Response. We consider management's actions responsive to the recommendation. We believe it would also be beneficial to have a consistent, singular set of instructions in a formal document, such as the Strategic Management Handbook, for all NASA offices to use in developing their performance targets. Those instructions should describe what an effective target is, provide examples, and require that the development process include coordination with responsible Centers, advisory groups, and other offices having a role in achieving or measuring results. Although we encourage management to take these additional steps, we accept the proposed actions and will monitor this area in our ongoing audits to determine whether the existing procedures are adequate. Accordingly, this recommendation is considered dispositioned and closed with issuance of this report.

- 2. Establish policy requiring the program and other offices to validate and certify supporting data and reported final results prior to submitting them for inclusion in the annual Performance Report.**

Management's Response. Concur. Separate guidance will be issued annually, along with the addition of quarterly reviews of progress that are documented in the internal office work instructions. It is unnecessary to further document responsibilities of the performing organizations for the quality and certification of the performance data. The complete text of management's response is in Appendix D.

Evaluation of Management's Response. Management's planned actions are responsive to the recommendation. As discussed earlier, we believe it would be beneficial to clearly describe in the Strategic Management Handbook, or a similar formal policy document, the steps that are to be taken to validate and verify the data. The handbook or policy would provide a single set of

guidelines for all NASA offices to follow and would result in greater assurance that all performance information in the annual Performance Report was consistently and fully validated. As with recommendation 1, we encourage management to take this additional action, and we will monitor this area in our future GPRA audit work to determine whether planned actions are effective. Accordingly, this recommendation is considered dispositioned and closed with issuance of this report.

3. Review and correct information on the five targets discussed in this report, and review FY 1999 targets not covered in this audit to ensure the reported results and supporting data are accurate and reliable (or qualify and explain them as needed) prior to issuing the annual Performance Report.

Management's Response. Concur. Management reviewed the performance statements for the five targets discussed in the report and made corrections or clarifications in the final Performance Report. In addition, the Office of the CFO requested a confirmation from all Enterprises and Crosscutting Processes that they have validated their inputs to the annual Performance Report. The complete text of management's response is contained in Appendix D.

Evaluation of Management's Response. Management's planned actions are responsive to the recommendation. The recommendation is, therefore, considered dispositioned and closed with issuance of this report.

In relation to actions on the five targets discussed in management's response, we have the following observations. For target H-18 (to increase Space Shuttle predicted reliability by 60 percent), management indicated that the Performance Report will not discuss the external study on the models, or the issues it raised, because the study occurred after the end of the fiscal year and "...a fuller discussion would not add value to the reporting...." We believe that any information available on all performance data discussed in the Performance Report prior to its issuance should be included to fully explain and support the data and results being reported. If the Performance Report is going to be useful to NASA, Congress, and others, the information in the report must be accurate and reliable. Achieving a high degree of accuracy and reliability requires full disclosure of any limitations or questions about the results and supporting data. Management should ensure that such limitations or questions are fully explained in reporting all future performance results.

Regarding target MS-6 (to increase obligated funds for performance-based contracts), management referenced the review the Office of Procurement performed. The full results of that review were not available at the time we performed our audit work. Our concerns on this target were based primarily on information available at the time, which clearly showed contracts were still occasionally misclassified as being performance-based. Such misclassification would impact the accuracy of the funding amounts, and thus achieving the target. Our intent was to ensure that the Performance Report fully discussed any known limitations with the reported results and supporting data. If management has current information showing that the results on this (or any) target are highly reliable, then that information should be included in the Performance Report to give the reported results added credibility.

Appendix A. Objectives, Scope, and Methodology

Objective

Our objective was to identify and evaluate data and information supporting the results for selected GPRA-related performance targets to determine whether they were reliable.

Scope and Methodology

The audit covered targets contained in NASA's revised FY 1999 Performance Plan that was issued in February 1999. NASA's plan included 145 performance targets. In order to perform this review, we concentrated on targets that fit within three areas considered critical to the Agency: Procurement, Information Technology, and Safety. Further, we included only targets that NASA intended, at the time of our audit, to report as being fully achieved or exceeded. We reviewed 23 performance targets that, in our opinion, met those criteria. Appendix B provides details on the targets reviewed. Although we did not use statistical sampling procedures, we considered the selected targets reasonably representative of all the targets included in NASA's Plan.

In performing the audit we:

- Reviewed GPRA legislation, OMB guidance, and related documentation relative to measuring and reporting performance results.
- Obtained and reviewed, for the selected targets, the measured data and information supporting the results that were planned to be included in NASA's FY 1999 Performance Report.
- Interviewed NASA personnel and others who had a role either in collecting and providing the data and information used to measure results or in summarizing and reporting the results.
- Determined, through interviews and review of readily available studies or analyses, whether there were known major problems with the systems or sources of the performance data.

Management Controls Reviewed

We reviewed the following controls with respect to measuring and reporting performance:

- NASA FY 1999 Performance Plan (revised February 1999)
- NASA Strategic Handbook (October 1996)
- OMB Circular A-11, "Preparing and Submitting Budget Estimates" (July 12, 1999)

Appendix A

- NASA CFO Memorandum on Performance Information (October 27, 1999)

Management controls for validating the reliability of GPRA-related performance data and the reported results are not adequate as discussed in the finding.

Audit Field Work

We conducted field work from late October 1999 through January 2000, primarily at NASA Headquarters. However, we also made brief contacts at Goddard, Johnson, Kennedy, Langley, Marshall, and Stennis to obtain information. We performed the audit in accordance with generally accepted government auditing standards.

Appendix B. Performance Targets Reviewed in Detail

Target Number	Target Description Stated in the FY 1999 Performance Plan
CK-10	Acquire 10,550 NASA-sponsored, -funded, and/or –generated report documents for the American scientific community and public, publish 26 issues of an electronic current awareness product to announce additions to the NASA science and technical information database, and add 24,400 bibliographic/citation records to the online NASA science and technical information database.
GK-1	Submit 80 percent of Agency research projects to peer-reviewed processes.
H-1	Support an expanded research program of approximately 800 investigations, an increase of about 9 percent over FY98.
H-18	Achieve a 60 percent increase in predicted reliability of the Space Shuttle over 1995.
H-19	Deploy and activate the Russian-built Functional Cargo Block (FGB) as the early propulsion and control module.
H-23	Initiate preparations for the launch of the first EXPRESS rack with five payloads on assembly flight 7A-1.
H-25	Complete the development of countermeasure research protocols, and begin testing at least three countermeasures to protect bone, muscle, and physical work capacity.
H-35	Increase industry investment (cash and in-kind) in space research from \$35 million in FY96 to at least \$50 million in FY99 – a 40 percent increase.
H-41	Deploy and activate the first U.S.-built element, Unity (Node 1), to provide docking locations and attach ports.
H-42	Initiate full-scale Multi-Element Integration Testing (MEIT) for elements in the first four launch packages.
H-43	Deliver the U.S. Laboratory module to the launch site in preparation for MEIT.
H-44	Conduct physical integration of the Z1 Truss launch package and initiate MEIT.
MS-6	Increase obligated funds available for performance-based contracts (PBC) to 80 percent (funds available exclude grants, cooperative agreements, actions <\$100,000, SBIR [Small Business Innovation Research], STTR [Small Business Technology Transfer Research], FFRDC [Federally Funded Research and Development Centers], intergovernmental agreements, and contracts with foreign governments or international organizations).
MS-7	Achieve at least the congressionally mandated 8 percent goal for annual funding to small disadvantaged businesses (including prime and subcontracts, small disadvantaged businesses, HBCU's [Historically Black Colleges and Universities], other minority institutions, and women-owned small businesses).
MS-8	Improve information technology infrastructure service delivery to provide increased capability and efficiency while maintaining both a customer rating of “satisfactory” and costs per resource unit at the FY98 baseline.

Appendix B

Target Number	Target Description Stated in the FY 1999 Performance Plan
MS-9	Enhance contract management through improved systems and information for monitoring and through an emphasis on the training of procurement personnel, and revise metrics to assess the overall health of the procurement function.
MS-10	Enhance contract management through improved systems and information for monitoring and through an emphasis on the training of procurement personnel, and implement a strategy for evaluating the efficacy of procurement operations.
P-4	Reduce the 5-year average spacecraft development time for Space Science and Earth Science to 5 years, 2 months from 8 years, 3 months.
P-6	Set up a process to determine percentage of the Agency's R&D budget dedicated to commercial partnerships, and establish a baseline.
R-5	For the aviation safety areas of Controlled Flight into Terrain, runway incursion, and loss of control, identify the contributing causes to be addressed, potential solutions using current capabilities, and gaps that require technology solutions.
Y-18	EOSDIS [Earth Orbiting Satellite Data Information System] will increase the volume of data archived by 10 percent compared to FY97 (at 126 terabytes). Goddard has been collecting trend data since FY94.
Y-21	Award 50 new graduate student research grants and 20 early career postdoctoral fellowships in Earth Science.
Y-33	Complete solicitation for at least seven cooperative agreements with State and local governments in land-use planning, land capability analysis, critical areas management, and water resources management.

Appendix C. Summary of Prior Audit Coverage

NASA Office of Inspector General

“NASA Implementation of the Government Performance Results Act,” IG-99-055, September 28, 1999. The report states that NASA (a) had not made a timely assessment of progress in achieving FY 1999 performance goals and (b) had not established formal procedures to ensure that all the data and information used to evaluate progress and report final results are accurate and reliable. The report contains three recommendations to assist NASA in addressing and correcting these issues. Management concurred with all recommendations.

General Accounting Office (GAO)

“Managing for Results: Observations on NASA’s Fiscal Year 1999 Performance Plan (letter report),” June 5, 1998, GAO-NSIAD-98-181. Pursuant to a congressional request, GAO reviewed NASA’s plan with a focus on (1) goals and objectives including how the Agency plans to measure progress toward achieving the goals and objectives, (2) Agency strategies and resources needed to achieve the goals and objectives, and (3) availability and reliability of data necessary to achieve progress.

GAO determined that the Agency's plan could provide a clearer picture of intended performance across the Agency, does not fully portray the strategies and resources needed, and does not provide complete confidence that the information NASA will use to assess performance will be accurate, complete, and credible. GAO noted a number of strengths in the plan including that it provided good linkage between strategic goals and the plan’s performance goals and targets and that it used generally objective, quantifiable, and useful performance measures.

Appendix D. Management's Response

National Aeronautics and
Space Administration
Headquarters
Washington, DC 20546-0001



Reply to Attn of:

BR

MAR 20 2000

TO: W/Assistant Inspector General for Auditing
FROM: B/Chief Financial Officer
SUBJECT: Comments on the Draft Report on the Audit of the FY 1999
Performance Data, Audit A0000500

We would like to take the opportunity to thank you for your evaluation. Your concerns have been incorporated into the final FY 1999 Performance Report.

With regard to your recommendations, we concur with the intent of all of them and have outlined our approach to implementing them in the enclosure.

We have also enclosed our analysis of the Performance Targets with which you took issue.


Arnold G. Holz

Enclosures

Recommendation 1: Establish policy for the program and other offices to use in developing performance targets for the annual Performance Plan, and participate in the development process to ensure that all targets are clear and specific, and can be accurately measured and reported.

We concur with the intent of the recommendation. The Office of the CFO has developed Office Work Instructions, HOWI17410-B001 and HOWI17410-B003, to be followed in both the development of plans and provision of reports. A number of Headquarters offices have developed similar work procedures for these processes that will be going through or have been through ISO certification. These work instructions, along with guidance issued as a part of the annual budget guidance and supporting directions relative to reporting requirements are intended to provide that guidance.

Recommendation 2: Establish policy requiring the program and other offices to validate and certify supporting data and reported final results prior to submitting them for inclusion in the annual Performance Report.

We concur with the intent of the recommendation. Separate guidance will be issued annually, along with the addition of Quarterly reviews of progress that are documented in the ISO OWIs. It is unnecessary to further document responsibilities of the performing organizations for the quality and certification of the performance data.

Recommendation 3: Review and correct information on the five targets discussed in this report, and review FY 1999 targets not covered in this audit to ensure the reported results and supporting data are accurate and reliable (or qualify and explain them as needed) prior to issuing the annual Performance Report.

We concur with the recommendation. The performance statements for the five targets have been reviewed and corrections or clarifications have been added to the final Performance Report. In addition, we have requested a confirmation from all Enterprises and Crosscutting Processes that they have validated their inputs to the annual Performance Report.

Background for IG audit A00000500

The audit reviewed 23 of 145 Performance Targets

- Reportedly selecting for Procurement, IT, and Safety and Mission Assurance
- Found no issues with 18 of the 23
- Suggest that since they found a few there are others

HEDS Target H-18 Achieve a 60% increase in predicted reliability of the Space Shuttle over 1995

- IG challenges the wording of the target – only the Main Engines were included – wording of target suggested more elements.
- It was commonly understood within the agency that the only elements being evaluated were the propulsion upgrades, since they were the only changes being introduced in this time period.
- IG challenges the efficacy of the models used to generate the evaluation, citing an outside study of the models which reported out in **January 2000**.
- The discussion in the Performance Report was expanded to identify the particular models utilized to generate the results. Since the results of the cited study were not available prior to the completion of the FY 1999 reporting period, it was thought that a fuller discussion would not add value to the reporting of FY 1999 evaluations.

HEDS Target H-1 Support an expanded research program of approximately 800 investigations, an increase of about 9 percent over FY 1998.

- The IG challenged the reported data and Code U revisited the entire data set, making corrections which reduced the originally reported figure of 877 to 872.
- The final figure included in the FY 1999 Report is 872.
- The IG also raised questions about whether the investigations were all peer-reviewed and concluded that they were not. The question of peer review was not part of the performance target in question.

ESE Target Y-33 Complete solicitation for at least seven cooperative agreements with state and local governments in land use planning, land capability analysis, critical areas management and water resources management.

- Code Y reported 11 cooperative agreements – 7 Cooperative Agreements (with a capital C) and 4 grants were awarded to various partnerships of governments and universities.
- IG issue that the 11 were not all Cooperative Agreements – we agree and modified the report language to describe the component elements of the 11.
- IG issue that a number of the agreements were with Universities as principle parties. We modified the language to describe the nature of the agreements – multiple parties on most.

Manage Strategically Target MS-8 Improve information technology infrastructure service delivery to provide increased capability and efficiency while maintaining

Appendix D

both a customer rating of "satisfactory" and costs per resource unit at the FY 1999 baseline.

- IG again raised an issue with the wording of the target, relative to the data being reported. The IG did not look at the same measure in the FY 2000 Performance Plan, which provided graphics of the measures being taken to evaluate performance. These graphics in the FY 2000 Plan are those reported in the FY 1999 Performance Report, clearly demonstrating our intent to use those measures for the performance target in question.
- The graphics in the FY 1999 Report clearly indicate that only NACC and NISN are included in the performance being reported.
- This non-issue is the result of conducting an audit prior to completion of the final product.

Manage Strategically Target MS-6 Increase obligated funds available for performance based contracts (PBC) to 80% of the funds available for PBCs.

- The IG cited procurement reviews identification of inaccuracy of the data contained in the FACS system based on 4 errors in a sample of 22 contracts.
- The FACS data has been utilized to generate both the targets in the plan and the historical data included in the displays (FY 1995- FY 1999). Any errors would be counted as consideration for both the target established and for the results.
- The FY 1999 Report documents the data source and the periodic validation processes (which identified the errors) in discussing the conclusions.
- The Office of Procurement has undertaken a study related to a recent OFPP definition and will publish those results in a separate document this Fiscal Year. They preferred to hold any further conditioning until that report is released.
- We have in hand a statement from Code H that they take issue with the IG's conclusion, based on the limited data set reviewed. Based on the Code H review of 75% of the total PBC obligations, discovering an error rate of 2%, they have concluded that the dataset is reliable.

Appendix E. Report Distribution

National Aeronautics and Space Administration (NASA) Headquarters

A/Administrator
AE/Chief Engineer
AF/Chief Technologist
AI/Associate Deputy Administrator
B/Chief Financial Officer
B/Comptroller
BF/Director, Financial Management Division
G/General Counsel
H/Associate Administrator for Procurement
I/Associate Administrator for External Relations
ID/Director, Assessments and Technology Division
IM/Director, Resources Management Office
J/Associate Administrator for Management Systems
JM/Director, Management Assessment Division
L/Associate Administrator for Legislative Affairs
M/Associate Administrator for Space Flight
P/Associate Administrator for Public Affairs
R/Associate Administrator for Aero-Space Technology
S/Associate Administrator for Space Science
U/Associate Administrator for Life and Microgravity Sciences and Applications
Y/Associate Administrator for Earth Science
Z/Associate Administrator for Policy and Plans

NASA Advisory Official

Chairperson, NASA Advisory Council

NASA Centers

Director, Ames Research Center
Director, Goddard Space Flight Center
Director, Lyndon B. Johnson Space Center
Director, John F. Kennedy Space Center
Chief Counsel, Kennedy Space Center
Director, Langley Research Center
Director, George C. Marshall Space Flight Center

Appendix E

Non-NASA Federal Organizations and Individuals

Assistant to the President for Science and Technology Policy
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

Chairman and Ranking Minority Member - Congressional Committees and Subcommittees

Senate Committee on Appropriations
Senate Subcommittee on VA, HUD, and Independent Agencies
Senate Committee on Commerce, Science, and Transportation
Senate Subcommittee on Science, Technology, and Space
Senate Committee on Governmental Affairs
House Majority Leader
House Committee on Appropriations
House Subcommittee on VA, HUD, and Independent Agencies
House Committee on Government Reform
House Subcommittee on Government Management, Information, and Technology
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

NASA Assistant Inspector General for Auditing Reader Survey

The NASA Office of Inspector General has a continuing interest in improving the usefulness of our reports. We wish to make our reports responsive to our customers' interests, consistent with our statutory responsibility. Could you help us by completing our reader survey? For your convenience, the questionnaire can be completed electronically through our homepage at <http://www.hq.nasa.gov/office/oig/hq/audits.html> or can be mailed to the Assistant Inspector General for Auditing; NASA Headquarters, Code W, Washington, DC 20546-0001.

Report Title: Validating FY 1999 Performance Data To Be Reported Under the Government Performance Results Act (GPRA)

Report Number:

Report Date:

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
4. The report contained sufficient information to support the finding(s) in a balanced and objective manner.	5	4	3	2	1	N/A

Overall, how would you rate the report?

Excellent
Very Good
Good

Fair
Poor

If you have any additional comments or wish to elaborate on any of the above responses, please write them here. Use additional paper if necessary. _____

How did you use the report? .

How could we improve our report? _____

How would you identify yourself? (Select one)

Congressional Staff

Media

NASA Employee

Public Interest

Private Citizen

Other: _____

Government: _____ Federal: _____ State: _____ Local: _____

May we contact you about your comments?

Yes: _____

No: _____

Name: _____

Telephone: _____

Thank you for your cooperation

Major Contributors to This Report

Chester A. Sipsock, Program Director, Environmental and Financial Management Audits

V. Richard Dix, Program Manager

Linda Wagner Anderson, Auditor

Teresa J. Danne, Auditor

Nancy C. Cipolla, Reports Process Manager

Annette Huffman, Program Assistant