

IG-97-004

AUDIT REPORT

CIVIL SERVICE WORK FORCE REPORTING AT AERONAUTICS CENTERS

November 6, 1996



National Aeronautics and
Space Administration

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National Aeronautics and
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Reply to Attn of: W

November 6, 1996

TO: R/Associate Administrator for Aeronautics

FROM: W/Assistant Inspector General for Auditing

SUBJECT: Final Report
Civil Service Work Force Reporting at Aeronautics Centers
Assignment No. A-LA-95-005
Report No. IG-97-004

The NASA Office of Inspector General has completed an audit of Civil Service Work Force Reporting at Aeronautics Centers. Overall, the aeronautics Centers do not have systems and processes in place to adequately plan for and report civil service labor. The importance of developing reasonable estimates and accurately recording time charges against aeronautics programs has not been emphasized. Consequently, aeronautics managers lack accurate and reliable labor data for use in planning, decision making, and evaluating the efficiency of their programs.

We believe the inability to reasonably plan for and accumulate labor charges against aeronautics programs is a significant area of concern. We reported it to management as an internal control concern for consideration in preparing the FY 1996 Federal Managers' Financial Integrity Act annual report.

We issued a discussion draft of this report to the Associate Administrator for Aeronautics on August 23, 1996. On September 17, 1996, we met with the Director of the Resources Management Office, Office of Aeronautics (OA), and other Headquarters representatives to discuss the report. The Associate Administrator for Aeronautics provided a written response to us on October 29, 1996. These comments are shown after each recommendation and in Appendix 5 of the report. The OIG's evaluation of these comments is incorporated in the report.

OA management fully concurred with recommendations 1, 2, and 3 and concurred with qualifications to recommendations 4 and 5. We request to be included in the concurrence cycle for closure of all five recommendations.

The NASA Office of Inspector General staff members associated with this audit express their appreciation to the NASA personnel for their courtesy, assistance, and cooperation. If you have any questions or need additional information, please contact Lee T. Ball, Program Director, Aeronautics and Space Transportation, at 757-864-8500, or or me at 202-358-1232.


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TABLE OF ACRONYMS

ARC	AMES RESEARCH CENTER
AST	ADVANCED SUBSONIC TECHNOLOGY
DFRC	DRYDEN FLIGHT RESEARCH CENTER
FTE	FULL-TIME EQUIVALENT
FWOCS	FABRICATION WORK ORDER CONTROL SYSTEM
FY	FISCAL YEAR
HPCC	HIGH-PERFORMANCE COMPUTING AND COMMUNICATIONS
HSR	HIGH-SPEED RESEARCH
IFMP	INTEGRATED FINANCIAL MANAGEMENT PROJECT
LARC	LANGLEY RESEARCH CENTER
LERC	LEWIS RESEARCH CENTER
NASA	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
OA	OFFICE OF AERONAUTICS
RMO	DIRECTOR OF THE RESOURCES MANAGEMENT OFFICE
RTR	RESEARCH AND TECHNOLOGY RESUME
R&T	RESEARCH AND TECHNOLOGY
UPN	UNIQUE PROJECT NUMBER

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CIVIL SERVICE WORK FORCE REPORTING AT AERONAUTICS CENTERS

EXECUTIVE SUMMARY

INTRODUCTION

Civil service labor is a valuable but limited resource. To achieve its mission and goals, the Office of Aeronautics (OA) employs thousands of civil servants who perform a variety of technical and administrative tasks at four Centers. These Centers are the Ames Research Center, Dryden Flight Research Center, Langley Research Center, and Lewis Research Center. To manage this labor force, OA requires periodic reporting. Actual labor is reported against proposed usage, and explanations are required for significant deviations.

Program management reviews disclosed significant differences between planned and actual civil service work force requirements. The Director of the Resources Management Office (RMO), OA, requested the Office of Inspector General to evaluate civil service work force planning and reporting systems. It was not known if there were significant weaknesses and deficiencies within the planning and reporting systems.

OBJECTIVES

The overall objective of the audit was to determine whether aeronautics information systems properly budgeted, tracked, and reported civil service labor. Specifically, we determined whether:

- the work force planning process (annual and monthly time phasing) was comprehensive and resulted in reasonably accurate estimates of civil servant requirements;
- the aeronautics Centers used a consistent methodology to plan and record civil service labor;
- direct time charges reported by the systems properly reflected actual time worked on projects; and
- employees were properly trained in developing work force estimates.

RESULTS OF AUDIT

Basic processes for work force planning and automated systems to collect, process, and report time charges were in place at the aeronautics Centers. However, work force planning and labor collection and reporting need increased management attention. Specifically, limited guidance was available to develop work force plans; procedures for planning and recording actual labor differed among the Centers; labor distribution systems did not accurately record actual time charges; and there were no formal training programs.

RMO recognized there were deficiencies and initiated corrective action to improve the processes. Other ongoing initiatives, like the Integrated Financial Management Project (IFMP) and implementation of full-cost accounting, impact work force planning and collection, processing, and reporting of time charges. Changes due to these initiatives may correct the remaining problems. However, it may be several years before these initiatives are completed.

Work Force Planning Improvements Are Needed. Insufficient guidance on work force planning precluded the development of realistic estimates of required labor and skill mix and resulted in inconsistent planning procedures. This occurred because employees had limited experience and little emphasis had been placed on developing realistic work force plans. As a result, the quality of work force plans was poor, work force requirements were constantly changing, and the ability to use work force plans as a management metric was limited. (Page 11)

Standardization Is Needed. Definitions and procedures to develop aeronautics work force plans and accumulate actual labor charges varied among the aeronautics Centers. This occurred because Centers were not required to use standard definitions and procedures as the basis for their financial management systems and work force planning. The lack of standardization resulted in inconsistent information that was difficult to understand and diminished the comparability of Center performance. (Page 13)

Labor Distribution Systems Need Improvement. Systems that accumulate and report actual labor charges at Ames Research Center and Langley Research Center had several deficiencies. These problems existed because civil service labor had been treated as a "free" resource and low priority had been given to the systems used to manage it. As a result, management lacked accurate labor data for

use in planning, decision making, and evaluating the efficiency of programs or Center operations. (Page 15)

Labor Reporting Was Inaccurate. Reporting on time cards and management reports did not accurately reflect labor incurred on projects. Although written policies existed, they were not enforced. Consequently, inaccurate data reduced the usefulness of labor data as a management or estimating tool. (Page 17)

Training Is Required. Many NASA aeronautics personnel lacked the knowledge to develop credible work force plans. The lack of training was due to the low priority given to work force planning. As a result, work force planning suffered. (Page 19)

RECOMMENDATIONS

We recommend the Director of the Resources Management Office, Office of Aeronautics:

1. Develop interim aeronautics-unique planning policies and procedures. The downsizing of the NASA infrastructure creates an immediate need for high-quality planning to ensure an adequate work force for aeronautics programs. These policies and procedures should be updated as necessary to comply with the Human Resources Management Plan, the IFMP, and full-cost accounting.
2. Assist the Chief Financial Officer in developing standard definitions for labor and standard collection procedures for implementation in IFMP and full-cost accounting. These definitions and procedures should be developed as soon as feasible and in accordance with the Joint Financial Management Improvement Program guidance and Federal Accounting Standards Advisory Board standards.
3. Assist the Chief Financial Officer in developing and implementing a standard labor distribution system and associated procedures as part of IFMP and full-cost accounting.
4. Issue guidance requiring:
 - actual time charges for each job worked be entered on time cards by employees performing the work;

- time performing or supporting research be included in program work force utilization reports; and
 - job orders be established for capturing time on all types of assignments, such as development of new research proposals, special teams, and experimental testing for NASA customers.
5. Work with the Associate Administrator for Human Resources and Education in establishing a training course for aeronautics work force planning.

INTRODUCTION

Civil service labor is a vital resource for carrying out NASA's Aeronautics Enterprise programs. The budgeted civil service work force in fiscal year (FY) 1996 for aeronautical research and technology was 3,342 full-time equivalents (FTE). An FTE is equal to one employee working for an entire year, or 2,080 hours. This requirement does not include personnel needed for Center management and operations, part-time and term employees, and cooperative students.

The audit was initiated in response to a request for assistance from the Director of the Resources Management Office (RMO), Office of Aeronautics (OA). Significant differences between planned civil service work force requirements and actual work force use were reported in program management reviews. It was not known whether plans were unrealistic, actual labor charges were collected and reported inaccurately, or variances were due to differences in planning and labor reporting systems.

NASA management at the Agency, Program Office, and Center level knew there were problems with work force planning and reporting and established teams to review the process and make recommendations. OA and Center managements established improvement teams to identify and correct work force planning and reporting problems. These teams were parallel efforts to the audit. As conditions were identified, management gave them to the teams to study. At the Agency level, NASA is developing and implementing full-cost accounting and an improved financial management system. Both projects will affect work force planning and reporting.

OA is responsible for formulating programs and their content; establishing policy; defining requirements; and allocating resources, including personnel, for NASA's Aeronautics Enterprise. There are four focused programs and the research and technology (R&T) base within the Aeronautics Enterprise. The focused programs are High-Speed Research (HSR), Advanced Subsonic Technology (AST), High-Performance Computing and Communications (HPCC), and Numerical Aerodynamic Simulator.

Aeronautics research is conducted primarily by four Centers: Ames Research Center (ARC), Dryden Flight Research Center (DFRC), Langley Research Center (LaRC), and Lewis Research Center (LeRC).

OA provides overall policy for management of aeronautics programs at ARC, DFRC, LaRC, and LeRC.

ARC leads aeronautics research in information systems and aviation operations systems, including human factors and air transportation management. DFRC's mission is flight research, including experimental aircraft, flight instrumentation and test techniques, and the test bed research program. LaRC's mission includes leading aeronautics research in airborne systems, structures and materials, aerodynamics, mission and systems analysis, and crew station design and integration. LeRC's mission is air breathing propulsion, including propulsion support technology and propulsion systems analysis.

Most of the audit work was performed at LaRC. At ARC and LeRC, work was limited to interviewing a sample of key personnel. At LaRC, work also included documenting systems for collecting labor charges and interviewing employees responsible for work force planning at the lowest level. Consequently, more conditions refer to LaRC than to the other Centers. This does not necessarily indicate that more problems exist at LaRC than the other Centers visited.

OBJECTIVES, SCOPE, AND METHODOLOGY

OBJECTIVES

The overall objective of the audit was to determine whether aeronautics information systems properly budgeted, tracked, and reported civil service labor. Specifically, we determined whether:

- the work force planning process (annual and monthly time phasing) was comprehensive and resulted in reasonably accurate estimates of civil servant requirements;
- aeronautics Centers used a consistent methodology to plan and record civil service labor;
- direct time charges reported by the systems properly reflected actual time worked on projects; and
- employees were properly trained in developing work force estimates.

SCOPE AND METHODOLOGY

To obtain an understanding of procedures for work force planning and reporting, we interviewed 76 individuals involved in various aspects of the process. These employees included researchers; branch, division, and group or directorate level personnel; AST, HSR, and HPCC project office personnel; and Center resources management personnel. At the time we interviewed LaRC personnel, a decision had not been made on how FY 1996 work force planning would be performed. Therefore, we concentrated on work force planning for FY 1994 and FY 1995. We obtained a historical perspective of the process and ongoing changes in procedures and reviewed directives and other reports on work force planning and reporting.

We focused primarily on work force planning and reporting procedures and systems at LaRC where 48 individuals were interviewed. We documented various labor collection and reporting systems by interviewing cognizant employees and reviewing reports. We did not perform procedures to test the accuracy of the labor systems. To test labor reporting, we judgmentally sampled 10 timekeepers representing 254 employees and analyzed labor data. Since the timekeepers we interviewed were not selected on a statistical basis, our results are not necessarily representative of all timekeeping at LaRC.

We performed a limited review of work force planning and reporting procedures and systems at ARC and LeRC where we interviewed a judgmental sample of key personnel. We discussed procedures with 11 employees at ARC and 17 employees at LeRC. The interviews were conducted primarily to identify significant weaknesses in work force planning and reporting and differences among the Centers. In addition, we received limited data on work force plans for FY 1996 at ARC and LeRC.

***MANAGEMENT
CONTROLS REVIEWED***

The following applicable management controls were reviewed during this audit:

- procedures for work force planning
- systems for collecting and reporting labor data

Management control weaknesses were identified and are described in detail in the Observations and Recommendations section of the report. Since 1989, NASA also identified weaknesses in financial management systems in the Federal Managers' Financial Integrity Act reports. The FY 1995 report classified the problems as a material weakness. Collection and reporting of labor data are a part of these systems.

***INDICATIONS OF
FRAUD, WASTE,
ABUSE, OR ILLEGAL
ACTS***

Nothing came to our attention during our audit to indicate instances of fraud, waste, abuse, or illegal acts.

AUDIT FIELD WORK

Field work was conducted from July 1995 through June 1996 at ARC, LaRC, and LeRC. The audit was performed in accordance with generally accepted government auditing standards.

OBSERVATIONS AND RECOMMENDATIONS

OVERALL EVALUATION

Basic processes for work force planning and automated systems to collect, process, and report time charges were in place at the aeronautics Centers. However, work force planning and labor collection and reporting need increased management attention. Specifically, limited guidance was available to develop work force plans; procedures for planning and recording actual labor differed among the Centers; labor distribution systems did not accurately record actual time charges; and there were no formal training programs.

MANAGEMENT IS COMMITTED TO IMPROVING WORK FORCE PLANNING AND REPORTING

Management recognized there were deficiencies and initiated corrective action to improve the processes. RMO established improvement teams to identify and correct work force problems. These teams were parallel efforts to this audit. Center and program management at ARC, LaRC, and LeRC have also taken an active role in identifying and supporting needed changes. On an Agency-wide basis, there has been a continuing effort to improve financial management. Implementation of the Integrated Financial Management Project (IFMP) and the new management, budgeting, and accounting practices associated with full-cost accounting may correct most of the problems identified in this report. While it is reasonable to expect IFMP and full-cost accounting to correct many problems, we were not able to identify how the problems will be addressed because detailed plans had not been fully developed.

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***WORK FORCE
PLANNING
IMPROVEMENTS
ARE NEEDED***

Insufficient guidance on work force planning precluded the development of realistic estimates of required labor and skill mix and resulted in inconsistent planning procedures. Employees had limited experience, and little emphasis had been placed on developing realistic work force plans. Comprehensive work force planning procedures did not exist. As a result, the quality of work force plans was poor, work force requirements were constantly changing, and the ability to use work force plans as a management metric was limited. Reliable and timely information must be obtained, maintained, reported, and used for decision making to ensure that programs achieve their intended results.

NASA managers need accurate and reliable information on which to make decisions. The comparison of planned and actual civil service work force is a metric used by the NASA Program Management Council. Employees should, therefore, have a standard set of procedures to follow and receive periodic feedback about their plans.

There was no definitive process and cohesive layout for work force planning. For example:

- Guidance from Headquarters and Centers on work force planning was limited. Work force calls from various Headquarters program offices required different kinds of information and were requested at different times during the year. Center internal work force planning did not coincide with Headquarters suspense dates. As a result, conflicting work force requirements existed. OA has a new initiative to integrate program execution planning with the development of the budget.
- Relatively little attention was given to work force planning before establishment of the Program Management Council. The initial program plans for the focused programs, such as HSR and AST, were developed without full coordination at the Centers. ARC, LaRC, and LeRC personnel agreed that the first plans were deficient, which resulted in variances between planned and actual requirements.

A listing of problems identified in the development of work force plans is contained in Appendix 1.

ARC, LaRC, and LeRC personnel felt work force planning improvements had been made each year based on acquired knowledge and

experience. They now understand the importance of accurately identifying and estimating work force requirements and agree that further improvements are needed.

NASA Office of Inspector General Audit Report MA-95-007, "Staffing for Space Station," identified there were no NASA policies on work force planning or standard estimating procedures. ARC and LeRC did not have any Center management instructions or handbooks. Existing policies and procedures at LeRC, such as LeRC Handbook 7100.1, were outdated and did not provide sufficient guidance on work force planning. The Associate Administrator for Human Resources and Education has agreed to establish Agency-wide policies and procedures for determining and documenting civil service work force requirements as part of the IFMP. The Agency is developing a Human Resources Management Plan that will address current and future human resource needs, including core competency skill requirements.

The quality of work force plans limited their usefulness. Senior NASA managers did not have accurate and reliable information on which to make decisions or evaluate the effectiveness of programs. Where work force requirements were understated on some programs, other programs may have incurred more than their fair share of program support costs, thereby reducing their net research money. Assessments for program support were based on planned personnel.

RECOMMENDATION 1

The Director of the Resources Management Office, Office of Aeronautics, should develop interim aeronautics-unique planning policies and procedures. The downsizing of the NASA infrastructure creates an immediate need for high-quality planning to ensure an adequate work force for aeronautics programs. These policies and procedures should be updated as necessary to comply with the Human Resources Management Plan, the IFMP, and full-cost accounting.

Management's Response

Concur. There is an active effort underway to develop these interim planning policies and processes. This effort will be designed to be compatible with the IFMP and full cost accounting. When the Strategic Management Handbook is published, we will make sure that our policies and procedures are consistent with it, as well as with any subsequent issuances relating to workforce planning and reporting.

***Evaluation of
Management's Response***

Management's planned action is considered responsive to the recommendation.

STANDARDIZATION IS NEEDED

Definitions and procedures to develop aeronautics work force plans and accumulate actual labor charges varied among the aeronautics Centers. To be meaningful, data must be developed and collected using standard data classifications and procedures. Centers were not required to use standard definitions and procedures as the basis for their financial management systems and work force planning. The lack of standardization resulted in inconsistent information that was difficult to understand and diminished the comparability of Center performance.

To be useful, managerial information must rely on consistent and uniform terminology and practices. The ability to use work force plans as a management metric is dependent on the use of consistent definitions and procedures in the planning system and in the financial management system that collects the actual data. These criteria are particularly important since NASA has implemented the "lead Center" concept. For focused programs and major programs for the R&T base, data combined from the various Centers should contain identical information components.

Although individual definitions and procedures used by each Center are not necessarily inappropriate, the lack of consistent and uniform practices can cause confusion and mis-communication. Several differences in development of work force plans and accumulation of actual labor charges were observed during our review. Labor classification definitions differed. Other differences included procedures for charging nonproductive time and fabrication work, accruing monthly labor, and handling program support activities. A listing of the differences identified during our audit is contained in Appendix 2.

There were no Agency-wide or OA policies on work force planning or standard estimating procedures. Historically, the Centers had great latitude in the development of their financial management systems. Consequently, each Center developed its own definitions and procedures for planning and labor distribution.

The lack of uniformity affected the usefulness of work force plans and actual labor data. It made cross-comparison among the Centers difficult at best. The lack of standardization made it hard to understand the components of the work force data and combine the

data. When NASA converts to full-cost accounting and implements IFMP, consistent terminology and methodologies should be employed for planning and recording civil service labor.

RECOMMENDATION 2

The Director of the Resources Management Office, Office of Aeronautics, should assist the Chief Financial Officer in developing standard definitions for labor and standard collection procedures for implementation in IFMP and full-cost accounting. These definitions and procedures should be developed as soon as feasible and in accordance with the Joint Financial Management Improvement Program guidance and Federal Accounting Standards Advisory Board standards.

Management's Response

Concur. We have already shared our functional requirements for workforce planning and reporting with the IFMP Team. We plan to continue to coordinate our efforts with the IFMP Team, and with the Office of the Chief Financial Officer.

***Evaluation of
Management's Response***

Management's planned action is considered responsive to the recommendation.

***LABOR DISTRIBUTION
SYSTEMS NEED
IMPROVEMENT***

Systems that accumulate and report actual labor charges at ARC and LaRC had several deficiencies. Systems for collecting data should have controls in place to ensure that the data are accurate, transactions are processed consistently, and corrections are made expeditiously. These problems existed because civil service labor had been treated as a "free" resource and low priority had been given to the systems used to manage it. As a result, management lacked accurate labor data for use in planning, decision making, and evaluating the efficiency of programs or Center operations.

Labor distribution systems should accurately collect, allocate, and report labor charges. Management controls over data entry, transaction processing, and reporting are required. Current and complete documentation of computer application programs is an important part of the management controls over transaction processing. A thorough understanding of a labor distribution system is essential for developing reasonably accurate forecasts of labor needs because planned work force requirements should be on a basis consistent with the methodology for reporting actual labor charges.

We identified labor distribution problems at two Centers based on interviews with a limited number of employees. For example:

- At one Center, management did not ensure the labor distribution system was reliable and adequately documented. Personnel were working to identify the problems, their scope, and impact.
- At another Center, the Manpower System was designed to allocate labor hours monthly with no capability to make adjustments for the cumulative effects of labor charges.

The problems we found were not quantified to determine their magnitude and impact. A listing of the problems identified during our audit is contained in Appendix 3.

The labor distribution system problems existed because work force data were not considered as important as research funding information. The budgets for civil service personnel and research were not funded by the same appropriation. Research managers were not held accountable for civil service personnel and viewed them as a "free" resource. Consequently, sufficient resources were not expended to update and maintain the systems as changes were needed.

As a result, management lacked accurate labor data for use in planning, decision making, and evaluating the efficiency of programs or Center operations. Allocations did not represent an equitable distribution of labor charges. Time charges reported for some projects were not accurate.

RECOMMENDATION 3

The Director of the Resources Management Office, Office of Aeronautics, should assist the Chief Financial Officer in developing and implementing a standard labor distribution system and associated procedures as part of IFMP and full-cost accounting.

Management's Response

Concur. OA is represented on both the IFMP Team, and the Full Cost Policy Group. We will continue to work with both groups to ensure that our management needs are designed into these new systems.

***Evaluation of
Management's Responses***

Management's planned action is considered responsive to the recommendation.

LABOR REPORTING WAS INACCURATE

Reporting on time cards and management reports did not accurately reflect labor incurred on projects. Program/project labor charges should be as accurate as possible. Although written policies existed, they were not enforced. Consequently, inaccurate data reduced the usefulness of labor data as a management or estimating tool.

LaRC's labor distribution policy, as set forth in Langley Management Instruction 9100.1 and as reiterated by Center management, required that labor hours be charged to the jobs actually worked. ARC and LeRC had similar policies.

Although more emphasis had recently been given to accurate time charging and many managers tried to prevent or correct improper time charges, some labor charges and program/project labor reports were not accurate. Some time cards were prepared using preestablished percentages rather than recording actual time worked on projects. Job orders were not established for all assignments. Overtime and work performed by part-time employees and cooperative students were not included in total program work force. Some low-level managers did not evaluate time charged by employees in other organizations to determine if the time charges were valid. A detailed listing of examples of inaccurate reporting on time cards and management reports is shown in Appendix 4.

Minimal emphasis was placed on the need to accurately report time spent on all types of work assignments. Employees had not been instructed to charge actual time spent on research and special projects. There were limited restrictions on who or what organization could charge to job orders and the number of hours that could be charged. Time charges were accepted to completed tasks. At LaRC, the use of predetermined percentages by timekeepers was an acceptable practice.

OA's ability to manage and report on its programs was adversely affected. Time charges did not reflect the actual amount of labor incurred and may have been understated, excessive, or unrelated to the projects or programs. The value of historical time charges as an estimating tool was diminished. The lack of accurate data inhibited management's ability to perform cost-benefit analyses. Detailed time collection will become even more important when NASA adopts full-cost accounting.

RECOMMENDATION 4

The Director of the Resources Management Office, Office of Aeronautics, should issue guidance requiring:

- actual time charges for each job worked be entered on time cards by employees performing the work;
- time performing or supporting research be included in program work force utilization reports; and
- job orders be established for capturing time on all types of assignments, such as development of new research proposals, special teams, and experimental testing for NASA customers.

Management's Response

Concur (with qualification). There may be instances when it is not practical that "time charges for each job worked be entered on time cards by employees performing the work" (emphasis added). For example, it may be necessary for a timekeeper to make the actual entries on timecards for employees who are on travel, or working at sites far from the timekeeper's desk. However, OA agrees with the principle that "actual time charges for each job worked be entered on time cards." As guidance is published to accompany both the interim system and the new system, OA will ensure that aeronautics Center guidance to employees includes consistent treatment of the need for accuracy, consistency, and 100% coverage of all work assignments by valid job orders or other charging mechanisms.

***Evaluation of
Management's Response***

The action planned by management is responsive to the recommendation. We agree there may be times when employees are not available to actually enter their time charges on time cards. However, we believe those employees should be responsible for accurate time charging and provide the actual entries to timekeepers. In some cases, corrections to submitted time cards may be necessary.

TRAINING IS REQUIRED

Many NASA aeronautics personnel lacked the knowledge to develop credible work force plans. Employees must have the knowledge and skills necessary to adequately perform their duties. The lack of training was due to the low priority given to work force planning. As a result, work force planning suffered.

Employees responsible for planning must understand how to estimate requirements and identify what resources are needed. Planners must be aware of management reports and how to interpret them.

Many people who worked at the branch level and below stated they had limited experience in work force planning. There were no instructions for preparing work force estimates. Planning information was communicated verbally and was subject to individual interpretation. The quality and quantity of information varied based on the knowledge level and experience of the provider. Many people did not know how to estimate support requirements or how the various labor distribution systems handled allocations of labor from activities such as fabrication, program, and other indirect support.

Due to the low priority of work force planning, little training was provided. At LaRC, training was limited to an overview of the planning process and the various data entry screens for entering data. No formal training was provided at ARC or LeRC.

The lack of training affected the quality of work force plans and NASA management's ability to use those plans as management tools. Work force requirements were understated because planners did not recognize what kind of support they needed or did not know how to estimate the amount needed.

RECOMMENDATION 5

The Director of the Resources Management Office, Office of Aeronautics, should work with the Associate Administrator for Human Resources and Education in establishing a training course for aeronautics work force planning.

Management's Response

Concur (with qualification). OA agrees with the need for a training course. However, we feel the real requirement is for an Agency-wide training course. Whatever the specific procedures at a Center may need to be, they should be consistent with Agency-wide workforce planning and reporting policies and processes. We agree that OA should work with OHRE [Office of Human Resources and Education] to develop such a course, but it needs to take into account the needs

of the other Enterprises, and their Centers. In addition, the advent of IFMP will implement an Agency-wide system, and necessitate Agency-wide policies and processes. Consequently we suggest this recommendation be reworded to call for an Agency-wide approach to training.

***Evaluation of
Management's Response***

The action planned by management is responsive to the recommendation. We agree Agency-wide training will be required with implementation of IFMP. However, we do not believe it is necessary to reword the recommendation. We audited work force planning and reporting procedures only at three aeronautics Centers and have no specific knowledge of work force-related deficiencies or lack of training in other Enterprises. The Office of Aeronautics should establish a training course before implementation of IFMP.

Work Force Planning Improvements

This appendix presents examples of problems in the development of work force plans before FY 1996.

- There was no definitive process and cohesive layout for work force planning. Work force calls from various Headquarters program offices required different kinds of information and were requested at different times during the year. Center internal work force planning and planning by the focused programs did not coincide with Headquarters suspense dates. As a result, conflicting work force requirements existed. OA has a new initiative to integrate program execution planning with the development of the budget.
- Guidance from Headquarters on work force planning was limited. Supplemental guidance provided by the Centers was often limited to a set of data definitions. The information was not always directed to those responsible for planning. For example, some LaRC Research and Technology Resume (RTR) writers did not receive instructions on how to plan or what information was required in developing estimated FTE's on their projects.
- Some researchers felt there was little emphasis on work force planning or comparison of planned and actual requirements. They received minimal or no feedback on the final approved plan for their research efforts or the accuracy of their plans.
- Personnel who participated in work force planning for several years stated there was no orderly approach and it was done differently every year.
- Additive factors were not always properly addressed in work force estimates. Additives included indirect time for research management (time allocated to projects by personnel at branch and division level), training, and work not directly related to a particular research project.
- Some RTR writers at LaRC did not understand the computation of an FTE. Work force plans were prepared using FTE's. An FTE should include leave and holiday time, but these items were often excluded when determining work force requirements.
- Researchers did not know the type of support they needed or how to estimate the amount of assistance from support organizations. Support organizations generally included fabrication and engineering support.

Work Force Planning Improvements

- Labor requirements for part of the HSR program in FY 1995 were underestimated because planners did not know how the LeRC labor distribution system spread civil service labor for fabrication work. They did not realize that civil service labor would be charged to their job orders when hardware was built on contract. This error caused a variance of nearly 20 FTE's in charges to Unique Project Number (UPN) 537-03.
- Support personnel were not included in the FY 1994 and FY 1995 work force plans developed by ARC for the HSR and AST programs.
- No direction was provided for the methodology to prepare time-phased plans. Some work force plans were expressed in current monthly needs rather than cumulative monthly average FTE's. In FY 1994, LeRC reported planned and actual data on the AST program using monthly statistics versus cumulative monthly averages.
- There was a lack of detailed program information on which to base monthly work force plans. Many requirements were straight lined for the entire year instead of showing fluctuations caused by major events, such as starting or ending a wind tunnel test.
- A few planners did not have a sufficient work force for all funded work. They assigned the available work force as best they could. This procedure did not identify the unfilled requirement.
- The availability of part-time employees and cooperative students was not included in program work force plans.

Standardization

This appendix presents examples of differences among the aeronautics Centers in the procedures used to develop work force plans and accumulate actual labor charges.

- Labor classification definitions varied among the Centers. Directorate level personnel were considered indirect labor at some Centers and direct labor at others.
- LaRC charged nonproductive time of direct personnel for activities such as training, attending symposia and colloquia, Center town meetings, and blood drives to Center management and operations. ARC charged this time to research projects. LeRC accumulated nonproductive time of direct personnel (i.e., generally below the Directorate level) in a Center-wide pool and allocated it to research projects. For indirect personnel, nonproductive time was charged to Center management and operations. Beginning in FY 1997, LeRC will accumulate nonproductive time in division pools.
- Each Center used a different method for charging civil service time for fabrication work.
 - ▶ LaRC allocated direct civil service labor monthly to research projects based on the ratio of total hours (i.e., civil service and support service contractors) charged to a research project to total hours for all projects during the month. Consequently, fabrication tasks done on contract received an allocation of direct civil service labor and the division's indirect labor (training, management, etc.). The monthly allocations were final and not adjusted for corrections made to previous pay periods.
 - ▶ ARC charged direct civil service labor directly to the research project. They allocated Manufacturing Division civil service indirect time based on the ratio of current dollars on the project-related orders to total dollars for all orders for the fiscal year. Contract management was included in the allocation. Only indirect civil service labor was charged to work done on contract. The allocations were adjusted every pay period using year-to-date data.
 - ▶ LeRC charged direct civil service labor, including time charged by the procurement staff, directly to projects. The division's indirect time charges were commingled with indirect time charged by other Center organizations. Using the Center-wide rate, indirect time was allocated to the projects. Beginning in FY 1997, an indirect rate will be established for each division.

Standardization

- When reporting labor, LeRC accrued FTE's through the end of the month for the reporting period. ARC and LaRC did not accrue labor — FTE's for the reporting period were actuals through about the middle of the month.
- The composition of program support activities and the method for spreading the associated labor to programs varied at the Centers. LaRC used civil service FTE's to allocate program support labor. LeRC did not classify civil service labor as program support. ARC and LeRC employees charged directly to projects whenever applicable; otherwise, indirect charges were allocated to projects or recorded as Center management and operations.

Labor Distribution Systems

This appendix presents examples of labor distribution problems. The problems are based on interviews with a limited number of employees at ARC and LaRC.

Ames Research Center. Management did not ensure the labor distribution system was reliable or that adequate documentation was maintained. Personnel knew there were problems and were working to identify all the problems, their scope, and impact. Some manual adjustments were being made. A decision to correct the problems or wait for IFMP will not be made until the full extent of the problems is known and a cost estimate is developed. The following problems were identified:

- Job order numbers were hard-coded in the software, which made it nearly impossible to add, delete, or change job orders. Carrier accounts for the multiprogram support functions were not loaded in the system. When job orders were reused, time was charged to the wrong UPN because the system processed the time against the former UPN — not the current one.
- Instead of spreading time for management of the Aeronautics Consolidated Supercomputing Facility to the supported projects, time was charged to a single job order assigned to the HPCC program.
- No documentation existed for the software programs. Consequently, no one we interviewed knew for certain how the system allocated leave.
- When there was a processing error, all time associated with the error was charged to a single job order and not subsequently corrected.

Langley Research Center. The Center Manpower System was designed to allocate labor hours monthly with no capability to make adjustments for the cumulative effects of the labor charges. Due to the possibility of large monthly fluctuations, the allocation of labor pools should be calculated on the size of the annual base. The following problems were identified:

- The allocation of research management (branch and division management/administrative personnel) time did not reflect the annual nature of their work. Research management time was charged to job order R9999, and the hours were spread to the RTR's with direct time charges for the month. There could be significant fluctuations in charges to RTR's each month, so some RTR's may have received a disproportionate amount of research management time.

Labor Distribution Systems

- Time recorded in the Manpower System did not agree with the charges in the Fabrication Work Order Control System (FWOCS). Labor data from FWOCS was merged into the Manpower System where edit tests were performed. During this process, some charges to job orders were not accepted by the Manpower System. Corrections were not always made to job orders actually worked during the period.
- Corrections made in FWOCS were not entered into the Manpower System. No action was taken to update the Manpower System because there was no clear understanding of the purpose of a "correction" report and the data provided was not sufficient to make changes.
- The allocation of civil servant time charges from FWOCS during a month may have been distorted because the table used for spreading civil service labor to RTR's was not updated for all work completed during the month.

Labor Reporting

This appendix presents examples of inaccurate reporting on time cards and management reports.

- The HSR program experienced problems with personnel charging to incorrect or inactive job numbers at the beginning of FY 1995 and FY 1996.
- Many LaRC researchers worked on multiple projects. However, interviews with timekeepers indicated that about one-third of the time cards were prepared using preestablished percentages rather than recording actual time worked on projects. Interviews with several managers supported this observation. The presumption was that, if the work got done, the time expended must have been close to the percentages. Because of the disconnect between preparing work force plans and scheduling work for a fiscal year, we were unable to determine whether the predetermined percentages agreed with published work force plans.
- Job orders were not established at ARC and LaRC to collect time charges for all assignments. Many individuals were involved in advance planning or assigned to special assignments, but there were no job orders to collect these time charges. Employees were charging their time to existing job orders.
- Some individuals worked on many small assignments for other organizations but no job order was established or provided by the sponsoring organization. The time was charged against an open job order for the other organization.
- Separate job orders were not set up for each test performed for the Department of Defense and industry or under cooperative agreements in an LaRC wind tunnel. Time spent performing these tests was charged to a single R&T base job order. While this practice complies with current policy, the amount of support provided individual customers was lost.
- Some low-level managers felt they had little or no control over people outside their division. They mainly managed the time charged by their division employees. They did not evaluate time charged by employees in other organizations to determine if the time charges were valid.
- The total amount of time was not included as time charged against projects. Overtime was not included in actual FTE's on projects. Work performed by part-time employees and cooperative students was not computed in total program work force.
- ARC did not report support personnel time for the HSR and AST programs to the program offices and Headquarters in FY 1994 and FY 1995. This was done to maintain consistency with the work force plans. FY 1996 reports included this time.

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Management's Response

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



Reply to Atn of: RB

OCT 29 1996

TO: W/Assistant Inspector General for Auditing
FROM: R/Associate Administrator for Aeronautics
SUBJECT: Discussion Draft Report on Civil Service Workforce Reporting
Assignment No. A-LA-95-005

Reference is made to your transmittal of September 19, 1996, same subject, requesting our comments on the subject report prior to final issuance. We appreciate the opportunity to review and comment on the discussion draft report. We have reviewed the subject report and our general and detailed comments follow.

General Comments

The Office of Aeronautics (OA) would like to acknowledge both the amount and quality of work that has gone into this report. It is a thorough analysis of a complex subject, and the results will be very helpful as OA and its Centers continue our efforts to improve workforce planning and reporting processes.

OA agrees with the major points on the draft report, namely:

1. Workforce planning improvements are needed;
2. Standardization is needed;
3. Labor distribution systems need improvement;
4. Labor reporting was inaccurate; and
5. Training is required.

Your report pointed out that the changes associated with the Integrated Financial Management Project (IFMP) and full cost accounting will correct many of the problems you encountered. It is also worth noting that the use of full cost principles in budgeting and management will help to provide the means for managers to correct the problems associated with workforce planning, since Project Managers know that their projects will be charged for their workforce based on these systems, and that having the money to pay for Civil Service (CS) labor will depend on valid CS workforce plans.

Detailed Comments

The draft report was issued as an organizational change was under discussion to combine the Space Transportation Division with the Office of Aeronautics. That organizational change is still under discussion, but has not been made. Since the subject report covers audit activities that were completed before any organizational change was contemplated, and only covers the four aeronautics Centers, recommend all references in the report to the Office of Aeronautics and Space Transportation (OAST) be changed to refer to the Office of Aeronautics (OA).

Management's Response

On page 6, paragraph 2, "airspace operations systems" have recently been renamed "aviation operations systems."

On page 11, paragraph 2 refers to a "Human Resources Management Plan" (HRMP) being developed by the Office of Human Resources and Education (OHRE). Informal discussions with a representative of OHRE has revealed that the HRMP, or its equivalent, will be issued by the Human Resources Management Steering Group, as part of the Capital Investment Council, as created by the new Strategic Management Handbook, which is currently in the process of being published. It is not known when the HRMP, or its equivalent, will be available, but the likelihood is that our first generation of system improvements will occur before that time.

With regard to the three recommendations contained in the Discussion Draft Audit Report, we respond as follows:

Recommendation 1:

Concur. There is an active effort underway to develop these interim planning policies and processes. This effort will be designed to be compatible with the IFMP and full cost accounting. When the Strategic Management Handbook is published, we will make sure that our policies and procedures are consistent with it, as well as with any subsequent issuances relating to workforce planning and reporting.

Recommendation 2:

Concur. We have already shared our functional requirements for workforce planning and reporting with the IFMP Team. We plan to continue to coordinate our efforts with the IFMP Team, and with the Office of the Chief Financial Officer.

Recommendation 3:

Concur. OA is represented on both the IFMP Team, and the Full Cost Policy Group. We will continue to work with both groups to ensure that our management needs are designed into these new systems.

Recommendation 4:

Concur (with qualification). There may be instances when it is not practical that "time charges for each job worked be entered on time cards by employees performing the work" (emphasis added). For example, it may be necessary for a timekeeper to make the actual entries on timecards for employees who are on travel, or working at sites far from the timekeeper's desk. However, OA agrees with the principle that "actual time charges for each job worked be entered on time cards." As guidance is published to accompany both the interim system and the new system, OA will ensure that aeronautics Center guidance to employees includes consistent treatment of the need for accuracy, consistency, and 100% coverage of all work assignments by valid job orders or other charging mechanisms.

Recommendation 5:

Concur (with qualification). OA agrees with the need for a training course. However, we feel the real requirement is for an Agency-wide training course. Whatever the specific procedures at a Center may need to be, they should be consistent with Agency-wide workforce planning and reporting policies and processes. We agree that OA should work with OHRE to develop such a

Management's Response

course, but it needs to take into account the needs of the other Enterprises, and their Centers. In addition, the advent of IFMP will implement an Agency-wide system, and necessitate Agency-wide policies and processes. Consequently we suggest this recommendation be reworded to call for an Agency-wide approach to training.


Robert E. Whitchhead

cc:
FM/S. Johnson
ARC/C200/R. Robinson
DFRC/XC/G. Young
LeRC/3-12/R. Fails
LaRC/109/J. Struhar

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