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# AUDIT GUIDE FOR RELIABILITY ASSESSMENT OF CONTROLS IN COMPUTERIZED SYSTEMS (Financial Statement Audits)



UNITED STATES
GENERAL ACCOUNTING OFFICE
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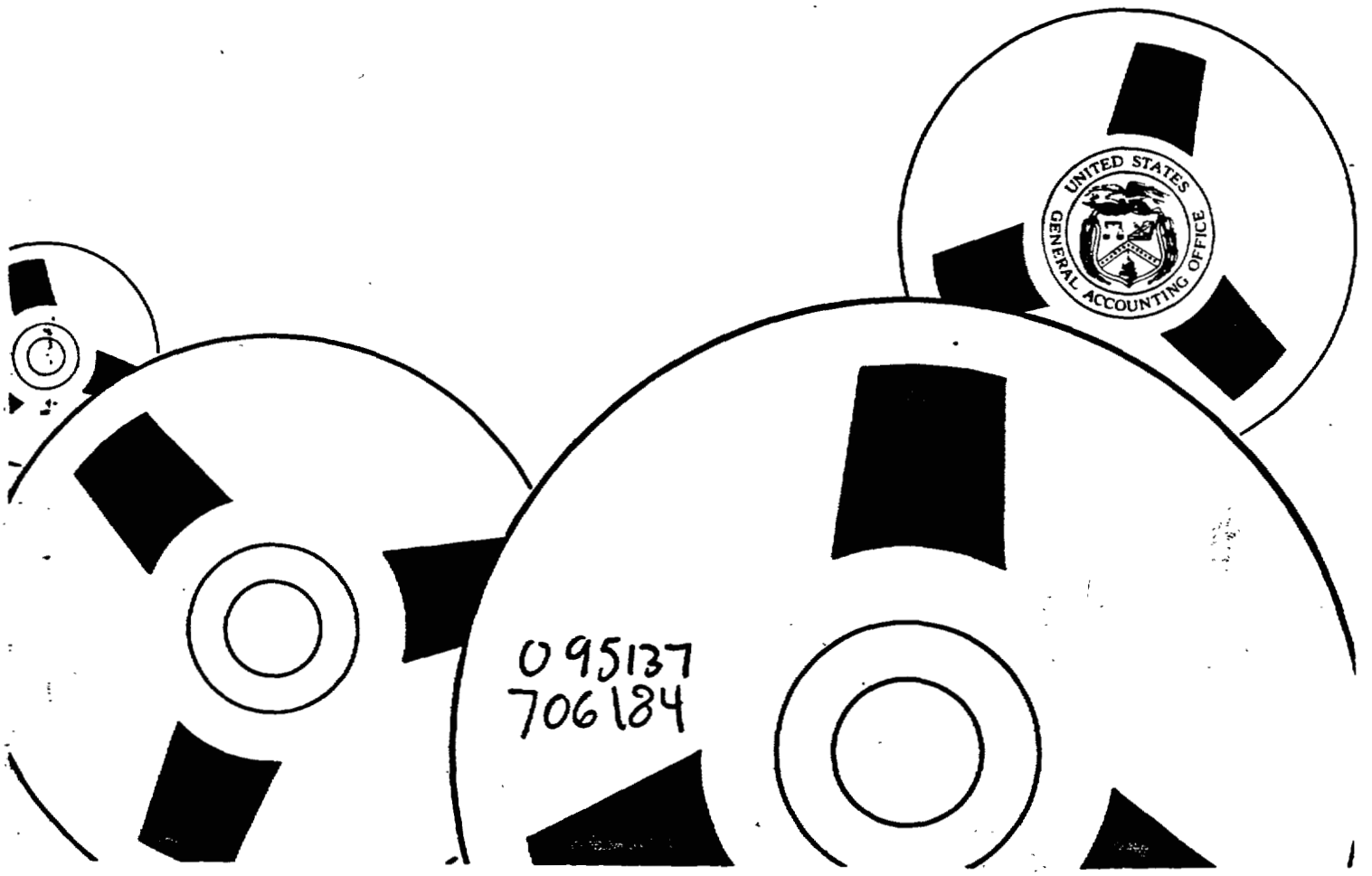

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

# FOREWORD

Much of the General Accounting Office's financial audit work involves evaluating output from complex automated accounting systems. These systems present new difficulties in judging the fairness of financial statements.

This guide presents a set of detailed procedures to help the auditor quickly evaluate internal controls in computer systems that produce financial statement information. This evaluation helps the auditor determine (1) the degree and type of risks run in relying on computer-produced financial information and (2) what additional audit tests are needed to minimize such risks.

Since data processing is a continuously developing area, we anticipate that this guide will be revised. Suggestions are welcome, and should be addressed to the Director, Financial and General Management Studies Division, U.S. General Accounting Office, Washington, D.C. 20548.

Comptroller General
of the United States

# Contents

## INTRODUCTION

When doing audits to express an opinion on financial statements, GAO auditors frequently use computer-generated information maintained in computer files or appearing in agency reports. However, the auditors must make sure such information is accurate and reliable (consistent with its intended use) before rendering an opinion on the statements.

## GAO AUDIT POLICY

In discussing automatic data processing (ADP), the Comprehensive Audit Manual (CAM) (part I, ch. 11) places the responsibility for determining the extent of reliability assessment squarely on the auditor:

--"When ADP is an important integral part of agency operations which we are auditing, our work should include an appropriate examination of the functioning of the ADP system. Further, if computer products or output are to be used in a report or in support of a finding, we should make an appropriate examination to provide reasonable assurance that the information is reliable, consistent with its intended use."

* * *

--"In determining the extent of examination, the auditor should consider the importance of the computer processed information in relation to the point being developed, and the degree of risk in using information that may contain inaccuracies."

* * *

--"On each assignment, the auditor must determine whether there would be a serious adverse effect on the accomplishment of our audit and reporting objectives if the information being used were incomplete or inaccurate in any material respect."

* * *

--"The auditor is responsible for performing sufficient evaluation work to provide reasonable assurance that information, whether processed by computer or otherwise, is relevant, accurate, and complete."

ADP audits require the auditor to apply the same policies and objectives used in examining any other agency program or activity. Auditing objectives remain the same whether ADP is employed or not. However, auditing procedures required to accomplish these objectives may be changed by the method of data processing used and may require the auditor to employ specialized ADP expertise.

PURPOSE OF THIS GUIDE

This guide presents an audit approach for evaluating controls over computer systems and for assessing the reliability of financial information processed by these systems. These guidelines should help the auditor

--assess the degree and type of risks run in relying on computer-processed financial information,

--determine what additional audit tests are needed to minimize risks disclosed, and

--suggest improvements in agency controls over computer processing.

This guide is designed primarily for GAO audits expressing an opinion on financial statements. (A separate "Audit Guide

for Assessing Reliability of Computer Output" was developed for use on program results, efficiency and economy, and compliance audits.)

## RISK OF USING COMPUTER PRODUCTS

Obviously, products of any information system, whether computerized or not, can be inaccurate or incomplete. However, computer-based products are special in that (1) they are deceptively neat (suggesting accuracy), (2) they do not show alterations made to data in the computer files, (3) their reliability is affected by data processing controls which are seldom consistently used in agency systems, and (4) they are part of a field where continuous changes in equipment and techniques hinder long-term credibility of a system.

Assessing controls over computer processing will help quantify the risks in using products from computerized information systems. The fewer the controls, of course, the greater the risk of using inaccurate information. The reliability assessment, however, helps determine only the potential for error; the dollar value or number of errors must still be determined through regular audit tests.

## AUDIT APPROACH

This guide should be used when there has been no previous reliability assessment of an agency's computerized financial information system and the auditor determines that

computer-processed data will affect a financial statement opinion. To see if an assessment has been made, the auditor should contact the appropriate technical assistance staff, review the permanent working paper files, and contact the agency's internal audit organization. If an assessment has been done, an update may be all that is required unless there has been a major system change.

Sections I through VI of this guide describe the steps necessary in determining

--what financial information is computer processed,

--the impact of computer-processed information on the financial statements, and

--whether the agency's controls insure that financial data is not added to, lost, or improperly manipulated.

Section VII includes an outline of a memorandum that should be prepared after completing the reliability assessment.

HOW TO USE THIS GUIDE

This guide is arranged in sections, or modules, each of which includes a brief explanation of the reasons for completing the detailed work steps that follow it. This arrangement permits the audit staff to complete the work steps in one module before moving to the next or to do work steps from several modules simultaneously.

The audit staff conducting the review should gather information for sections I through VI, assess the reliability

of the computer-processed data and the degree of risk in using it, and prepare a summary memorandum on the results of the assessment, as outlined in section VII. To help the inexperienced auditor, a glossary of computer terms is included as appendix II, and a bibliography is included as appendix III. If, however, certain sections cannot be completed by the regular audit staff because of technical complexities, technical assistance should be obtained.

Working Papers

GAO policy for documenting reliability assessments is stated in the Comprehensive Audit Manual (part I, ch. 11):

> "Work performed and the auditor's conclusions about the functioning of the ADP system and the reliability of computer processed data included in a GAO report or used in support of findings, conclusions, and recommendations should be recorded in the working papers in accordance with the standards prescribed in CAM I, chapter 19. When work is performed by use of computerized techniques including data processing and statistical programs, the step-by-step process should be sufficiently documented to permit the process to be repeated."

The working papers should be

--self-contained,

--prepared, indexed, and reviewed the same way as regular audit working papers,

--made part of the permanent file on the agency, and

--updated during each cyclical audit.

## Questionnaires

Questionnaires in this guide were developed to help the auditor gather needed information. The questions should be self-explanatory, however, if clarifications are required, technical assistance should be obtained.

Agency responses to the questionnaires will frequently be "yes" or "no," the latter indicating control deficiencies. All responses should be indexed to appropriate supporting documents or records of interviews. Where different agency officials are asked similar questions, the responses should be checked for consistency. Reasons for conflicting responses should be fully examined and documented.

## Profiles

In addition to the questionnaires, several profiles (exhibits 4, 13, and 21) are included in the guide to help the auditor measure risk (low, medium, or high) as related to the presence or absence of controls in the computer-based financial information system. Although the auditor decides which risk category applies, the profiles provide standard sets of criteria which should lead to more uniform decisions. Appendix I includes instructions for using profiles and assessing risk.

## Summary Memorandum

After completing the assessment, the auditor should prepare a memorandum summarizing the work performed and the reasoning behind conclusions drawn. Section VII includes an outline of the summary memorandum.

## SECTION I

## IDENTIFYING COMPUTERIZED FINANCIAL APPLICATIONS

### INTRODUCTION

Generally speaking, a computerized "financial application" is a set of computer programs designed to process data for such purposes as payroll, accounts payable, and inventory. These applications usually produce the account balance that appears on the financial statements.

This section of the guide is designed to help the auditor

--identify financial information processed by the computer,

--identify computer applications that have a major impact on the financial statements, and

--determine which financial applications should be reviewed in detail.

### AUDIT APPROACH

1. Complete exhibit 1, Overview - Financial Applications.

   In this connection, the auditor should review prior year workpapers and the current chart of accounts to get an overview of the agency's entire accounting system.

EXHIBIT 1

EXHIBIT 1

## OVERVIEW - FINANCIAL APPLICATIONS

Workpaper Index

1. Determine whether the general ledger is computerized. If computerized, attach a record layout. _____

2. Prepare a working paper schedule containing the following information: _____

| Agency's System Number | Name of Computer Application | Describe What the Computer Application Does | Estimated Annual Number of Transactions | Estimated Annual Dollar Amount |
|---|---|---|---|---|
| | | | | |

| Account Number(s) | Account Name(s) | Dollar Total From Working Trial Balance | List Sources for Each Working Trial Balance Figure |
|---|---|---|---|
| | | | |

| Identify the Major Users of Computer Products | Comments |
|---|---|
| | |

3. If any accounting or financial information is processed by an outside service bureau, prepare a working paper schedule containing the following information: _____

| Accounting Applications Processed | Describe What the Computer Application Does | Name of Service Bureau | Type of Processing | Estimated Annual Number of Transactions | Estimated Annual Dollar Amount |
|---|---|---|---|---|---|
| | | | | | |

| Account Number(s) | Account Name(s) | Dollar Total From Working Trial Balance | Identify the Major Users of Computer Products |
|---|---|---|---|
| | | | |

4. After completing this Overview - Financial Applications, the auditor should state specific reasons for selecting particular financial applications for further reliability assessment analysis. _____

## SECTION II

## TOP MANAGEMENT INVOLVEMENT WITH AUTOMATIC DATA PROCESSING FUNCTIONS

### INTRODUCTION

Management needs timely, accurate, and complete information to achieve planned results. Top management involvement in data processing activities via an internal audit organization and an ADP steering committee, helps insure that computer-processed information used in decisionmaking is reliable, helps management achieve its objectives, and helps assure the auditor that he/she can rely on the computer system's output.

This section will help the auditor determine the extent of internal audit group involvement in data processing, and the effectiveness of the ADP steering committee.

### INTERNAL AUDIT

If internal audit groups review and evaluate all aspects of agency operations, they can promptly and objectively evaluate agency ADP policies and procedures and help management achieve program objectives. To do this, however, these groups have to keep pace with continual computer technological advances.

#### Audit Approach

1. Complete exhibit 2, Internal Audit Questionnaire.
2. Obtain and review internal audit reports on data processing activities.

3. Complete the internal audit section of the Top Management Involvement Profile in exhibit 4. If internal audit has not made any ADP reviews, consider developing an appropriate recommendation.

ADP STEERING COMMITTEE

A steering committee is normally chaired by a representative of top management and includes senior management officials of the data processing department and representatives from departments that depend on computer processed information. An ADP steering committee usually

--approves agencywide policies for data processing systems,

--approves short and long range plans to develop and implement new computer systems,

--evaluates the need for new computer equipment, and

--insures that new computer equipment is acquired expeditiously.

Audit Approach

1. Complete exhibit 3, ADP Steering Committee Questionnaire.
2. Review committee minutes and reports.
3. Complete the ADP steering committee section of the Top Management Involvement Profile in exhibit 4.

EXHIBIT 2 EXHIBIT 2

## INTERNAL AUDIT QUESTIONNAIRE

| | Yes | No |
|---|---|---|
| **ADP Involvement:** | | |
| 1. Is the agency's ADP-related internal audit function documented? (If so, obtain copy for permanent file.) | _____ | _____ |
| 2. Has internal audit periodically reviewed the ADP function? | _____ | _____ |
| 3. Has internal audit developed an audit plan which includes ADP reviews? | _____ | _____ |
| 4. Does internal audit have an ADP team within its staff? | _____ | _____ |
| **Systems Design:** | | |
| 5. Does internal audit participate with data processing personnel in designing the agency's ADP systems? | _____ | _____ |
| 6. Does internal audit review testing and debugging procedures for changes to ADP programs and systems? | _____ | _____ |
| **Review Capability:** | | |
| 7. Does internal audit conduct reviews of agency financial and management information systems? | _____ | _____ |
| 8. Does internal audit review ADP security controls and privacy act standards? | _____ | _____ |
| 9. Does internal audit verify the information on ADP reports against related source documents? | _____ | _____ |
| 10. Does internal audit use test decks to ensure the reliability of operating programs? | _____ | _____ |

EXHIBIT 2

| | | Yes | No |
|---|---|---|---|
| 11. | Are automated data retrieval and analysis packages or specially written computer programs used for data retrieval? | _____ | _____ |
| 12. | Are test decks and/or audit retrieval programs stored under internal audit control? | _____ | _____ |
| 13. | Does internal audit supervise the running of test decks and/or audit retrieval programs? | _____ | _____ |
| 14. | Does internal audit maintain copies of the agency's systems documentation and ADP standards? | _____ | _____ |
| 15. | Are the control copies of operating computer programs compared, at least annually, with the operating programs used in production runs? | _____ | _____ |

Reporting requirements:

| | | | |
|---|---|---|---|
| 16. | Does internal audit maintain copies of memoranda and reports of all ADP review efforts? | _____ | _____ |
| 17. | Provide titles and workpaper indices for pertinent memoranda and reports gathered concerning previous ADP audit efforts._____ | | |

_____

_____

_____

NOTES

a. Explain any "No" answers on a separate workpaper. Note alternate control procedures.

b. After gathering all information required by this questionnaire, complete the Internal Audit portion of the Top Management Involvement Profile, exhibit 4.

EXHIBIT 3

## ADP STEERING COMMITTEE QUESTIONNAIRE

| | Yes | No |
|---|---|---|
| **Top Management Involvement:** | | |
| 1. Does the agency have an ADP Steering Committee? (Attach a copy of the committee's organization chart.) | _____ | _____ |
| 2. Does the ADP Steering Committee have prescribed, documented responsibilities? (Attach a copy of the committee's charter.) | _____ | _____ |
| 3. Does a top management representative chair the committee? | _____ | _____ |
| 4. Are major users of computer-processed information represented on the committee? | _____ | _____ |
| **Steering Committee Responsibilities:** | | |
| 5. Does the ADP Steering Committee interface with the agency's other ADP groups when developing ADP policies and plans? | _____ | _____ |
| 6. Does the Steering Committee: | | |
| --Approve agency policies for ADP? | _____ | _____ |
| --Approve short- and long-range plans for developing and implementing new systems? | _____ | _____ |
| --Evaluate the needs for new computer equipment and help make sure it is acquired expeditiously? | _____ | _____ |
| --Evaluate the need for ADP service center processing? | _____ | _____ |
| --Assign agency resources to accomplish ADP policies and plans? | _____ | _____ |
| --Consider user priorities? | _____ | _____ |

Reporting requirements

7. Provide title and workpaper indices for pertinent ADP Steering Committee minutes, staff reports, and memorandums gathered.

_____

_____

_____

_____

_____

NOTES

a. Explain any "No" answers on a separate workpaper. Note alternate control procedures.

b. After gathering all information required by this questionnaire, complete the ADP Steering Committee portion of the Top Management Involvement Profile, exhibit 4.

EXHIBIT 4 EXHIBIT 4

## TOP MANAGEMENT INVOLVEMENT PROFILE

Agency:_____Preparer:_____Date:_____

Job Code:_____Reviewer:_____Date:_____

You must use judgment in completing this profile. Based on the questionnaire responses relating to the following control characteristics, how much risk (low, medium, high) do you believe is involved in relying on the agency's computer-processed data? Refer to appendix I for more information on assessing risk.

| CONTROL CHARACTERISTIC | Is the control in place? | Is the control effective? | Is some alternate control in place? | Is the alternate control effective? | Level of potential risk |
|---|---|---|---|---|---|
| INTERNAL AUDIT: | | | | | |
| (a) ADP involvement | | | | | |
| (b) Systems design | | | | | |
| (c) Review capability | | | | | |
| (d) Reporting requirements | | | | | |
| ADP STEERING COMMITTEE: | | | | | |
| (a) Top management involvement | | | | | |
| (b) Steering Committee responsibilities | | | | | |
| (c) Reporting requirements | | | | | |

EXHIBIT 4

Briefly describe your justification for assigning the various risk levels for each control characteristic noted on the previous page. This information should be used in preparing the Summary Memorandum on Results of Reliability Assessment.

| Control characteristic | Brief description of risk justification | Recommendation for further audit work |
|---|---|---|

## SECTION III

## BACKGROUND INFORMATION ON ADP DEPARTMENT

### INTRODUCTION

An ADP department should meet the needs of its users. The computer center must be equipped to handle its workload.

This section helps the auditor gather background information needed to understand

--how the agency's ADP department is organized to meet financial information needs,

--how the agency's computer system is configured, and

--how much the computer services are costing the agency.

Even though this information is not directly related to assessing data reliability, it gives the auditor a good overview of agency operations.

### AUDIT APPROACH

1. Complete exhibit 5, Background Questionnaire.

   Appropriate agency personnel may complete the questionnaire to save time; however, the auditor should verify the information's accuracy and completeness. Some agencies use more than one computer system or contractor to process financial information. If so, prepare exhibit 5 for each

system or contractor. After completing the questionnaire, this background information should be placed in a permanent working-paper file.

EXHIBIT 5 EXHIBIT 5

## BACKGROUND QUESTIONNAIRE

### ADP Organizational Structure

Workpaper index

1. Obtain:

   Agency organization chart _____

   ADP department and/or computer center organization chart _____

2. Identify key officials in ADP department.

| Section and section head | Location and telephone number | Major duties and responsibilities |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
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| | | |
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| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

3. If the agency's ADP personnel duties are documented, obtain copies. _____

EXHIBIT 5

EXHIBIT 5

## ADP Department Staffing

| | Number Authorized | Number Assigned | Names of section supervisor |
|---|---|---|---|
| ADP general management | | | |
| Systems analysts | | | |
| Applications programers | | | |
| Systems programers | | | |
| Other technical support | | | |
| Computer operators | | | |
| Data entry operators | | | |
| Control clerks | | | |
| Schedulers | | | |
| Librarians | | | |
| Secretarial/clerical | | | |
| Other | | | |
| Totals | | | |

Anticipated staffing additions and deletions during the next 2 years:

EXHIBIT 5 EXHIBIT 5

## Computer Hardware System

CPU manufacturer _____

CPU model number _____

Date CPU installed _____

CPU physical location _____

Internal storage capacity _____

Direct access storage capacity _____

Console typewriter model number _____

_____

| Peripheral Devices: | Number of Devices |
|---|---|
| Magnetic tape drives: | |
| __ track, ___ density | _____ |
| __ track, ___ density | _____ |
| __ track, ___ density | _____ |
| Magnetic disk drives: | |
| __ series or model no. | _____ |
| __ series or model no. | _____ |
| __ series or model no. | _____ |
| Magnetic drum units | _____ |
| Other mass storage units (specific type) | _____ |
| | _____ |
| | _____ |
| Card readers | _____ |
| Card punches | _____ |
| Card reader/punches | _____ |

EXHIBIT 5 EXHIBIT 5

Line printers _____

(Lines per minute _____) _____

Online terminals _____

Remote batch terminals _____

Communications controllers _____

Optical scanners _____

MICR readers _____

Mark sense readers _____

Key-to-tape units _____

Key-to-disk units _____

Key punch/verify _____

Card sorters _____

Card collators _____

Card accounting machines _____

Other (specify) _____

EXHIBIT 5 EXHIBIT 5

## Computer Software and Utilization

### Facility software

Operating system: Name _____
Version _____
Release number _____

Operational efficiency software (ASP, HASP, etc.) _____

Data base/data communications software: (CICS, TOTAL, etc.) _____

Specialized software designed by installation (describe) _____
_____
_____
_____

### System utilization

Number of scheduled 8-hour shifts per day _____

Number of scheduled days per week _____

Average number of jobs per day _____

Total hours scheduled for past 3 months _____

Actual hours for past 3 months:

| | |
|---|---|
| Production | _____ |
| Testing | _____ |
| Rerun | _____ |
| Maintenance | _____ |
| Idle | _____ |
| Other | _____ |
| Total actual | _____ |

Explain how actual hours were derived. _____

_____

_____

Multiprograming factor (average number of programs running concurrently) _____

EXHIBIT 5

EXHIBIT 5

## ADP costs

| | Workpaper index |
|---|---|
| Total budgeted ADP costs | |
| Last fiscal year | _____ |
| Current fiscal year | _____ |
| Next fiscal year | _____ |
| ADP costs for most recently ended fiscal year (FY _____): | _____ |

| | Budgeted costs | Actual costs |
|---|---|---|
| Cost of rented equipment: | | |
| CPUs | _____ | _____ |
| All other | _____ | _____ |
| Cost of purchased equipment: | | |
| CPUs | _____ | _____ |
| All other | _____ | _____ |
| Hardware maintenance | _____ | _____ |
| Personnel: | | |
| ADP general management | _____ | _____ |
| Data entry | _____ | _____ |
| Computer operations | _____ | _____ |
| Systems design | _____ | _____ |
| Applications programing | _____ | _____ |
| Technical support | _____ | _____ |
| Library/control, etc. | _____ | _____ |
| Clerical and administrative | _____ | _____ |
| Supplies (cards, printer paper, etc.) | _____ | _____ |
| Contracts: | | |
| Data conversion | _____ | _____ |
| Other services | _____ | _____ |
| Facility costs: | | |
| Space | _____ | _____ |
| Utilities | _____ | _____ |

EXHIBIT 5

EXHIBIT 5

| | Budgeted costs | Actual costs |
|---|---|---|
| Other annual costs (specify) | | |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| Total ADP costs | _____ | _____ |

## SECTION IV

## USER SATISFACTION WITH COMPUTER-PROCESSED PRODUCTS

### INTRODUCTION

A computer-processed product should help the user make better decisions or increase his productivity. Users are important sources of information regarding data reliability because they are directly affected by data errors on reports and may be able to pinpoint specific errors.

This section is designed to get users' comments about the usefulness of computer-processed reports.

### AUDIT APPROACH

1. Refer to exhibit 1, Overview - Financial Applications; select major users best able to judge reliability of the computer-processed data and prepare exhibit 6, Overview - Principal Users.
2. Distribute exhibit 7, User Satisfaction Questionnaire - Computer-Processed Products, to major users for completion.

The auditor should confirm a sample of these questionnaire responses by personal interview. This followup interview is especially important in getting evidence about data reliability problems mentioned by users. The auditor should determine

--what causes data reliability problems,

--how frequently these problems are observed,

--whether the user can explain the reasons for these problems,

--whether studies have been made to identify the causes of these problems, and

--whether the user relies on manual records instead of computerized reports.

EXHIBIT 6 EXHIBIT 6

## OVERVIEW - PRINCIPAL USERS

Workpaper Index

1. Obtain a copy of the ADP department's product distribution list. This list should identify the specific users of computer-processed information. _____

2. Use the following working paper headings and prepare a summary schedule from the responses recorded on each USER SATISFACTION QUESTIONNAIRE--COMPUTER-PROCESSED PRODUCTS. _____

| Workpaper Index to USER SATISFACTION QUESTIONNAIRE | Computer Product Number | Name of User | User's Principal Function |
|---|---|---|---|
| Purpose of Product | Briefly Describe Problems Relating to Each Product and Its Impact | | |

The information on this schedule should help the auditor prepare a concise but informative Summary Memorandum on Results of Reliability Assessment.

EXHIBIT 7 EXHIBIT 7

## USER SATISFACTION QUESTIONNAIRE--
## COMPUTER-PROCESSED PRODUCTS

This questionnaire is designed to obtain the user's evaluation of computer-processed products. It includes questions on product format, sufficiency and accuracy of reported information, necessity for the product, and possibilities for product improvement. Since computer-processed data is ultimately generated for its users, responses to this questionnaire can be considered strong indicators of whether computer-processed products are reliable.

Product Identification:

1. Title _____
2. Data processing identification _____
3. Portion of product to be evaluated _____

   _____

   _____
4. Frequency of product _____

User Identification:

1. Name _____ Date _____
2. Title _____
3. Organization _____

EXHIBIT 7

4. Phone No./Address _____

5. Extent of your knowledge about product _____

_____

_____

User Evaluation of Product

1. For what purpose do you use the product?

___ Initiate transactions
___ Authorize changes to the system
___ Operate computer terminal
___ Maintain data controls
___ Design/Program applications
___ Other--Explain _____

2. In relation to the work of your office or division, the product is:

Not important at all — Very important

1 2 3 4 5 6 7 8 9 10

3. The product's contents are:

Very difficult to understand — Very easy to understand

1 2 3 4 5 6 7 8 9 10

Explain answers for questions 2 and 3 _____

_____

_____

4. Can the product be used as is without correction, further identification, or analysis?

___ Yes ___ No

5. In your judgment, is the data:

| | | |
|---|---|---|
| --Accurate and reliable? | ___ Yes | ___ No |
| --Available when needed? | ___ Yes | ___ No |
| --Current (v. outdated)? | ___ Yes | ___ No |
| --Useful? | ___ Yes | ___ No |
| --Understandable? | ___ Yes | ___ No |

For each "No" answer, please explain below and provide examples.

_____

_____

_____

_____

_____

_____

6. In your opinion, should the product

| | | |
|---|---|---|
| --provide more data? | ___ Yes | ___ No |
| --provide less data? | ___ Yes | ___ No |
| --be combined with other products? | ___ Yes | ___ No |

(a) Is any part of the product obsolete? ___ Yes ___ No

(b) Can it be improved to make your job easier? ___ Yes ___ No

For each "Yes" answer, please explain below.

_____

_____

_____

_____

_____

_____

7. If you maintain manual records to supplement computer-processed information, briefly explain.

_____

_____

_____

8. Does the product duplicate any other information you receive?

___ Yes ___ No

Explain _____

_____

_____

9. Can you readily obtain, from other sources, the information contained in the product?

___ Yes Source(s) _____

___ No _____

10. Do you supply the raw data (input) for this product?

___ Yes ___ No

11. Do you check this product for quality when you receive it from data processing?

___ Yes ___ No

If "No," please identify the person who performs this function.

_____

_____

12. Is the product ever rerun by data processing?

___ Yes ___ No

If "Yes," (a) How frequently? _____

_____

(b) Why were reruns necessary? _____

_____

(c) How do you make sure that rerun material is correct?

_____

13. If you have/had problems with this product, with whom would/did you discuss them? _____

_____

Is this person authorized to make changes to the product?

___ Yes ___ No ___ Unknown

14. Do you maintain correspondence with data processing or other departments concerning the product?

___ Yes ___ No (If yes, obtain copies)

15. Could you effectively perform your duties

(a) without this product? ___ Yes ___ No

(b) if this product were produced less often? ___ Yes ___ No

16. Did you or your department participate in designing the product?

___ Yes ___ No ___ Unknown

17. Does this product save you any clerical effort?

___ Yes Explain. _____

___ No _____

EXHIBIT 7

18. Can this product be improved to make your job easier?

___ Yes Explain _____

___ No _____

19. How often do you refer to this product?

___ Daily
___ Weekly
___ Monthly
___ Annually
___ Never
___ Other (Explain _____)

20. How long is the product kept after receipt?

___ 1 day
___ 1 week
___ 1 year
___ Other (Explain _____)

Filed at (location) _____
_____

## SECTION V

## ADP DEPARTMENT CONTROLS OVER DATA PROCESSING

### INTRODUCTION

An ADP department may process numerous computer applications (e.g., inventory, payroll) on the same computer system. Therefore, ADP department organizational problems or control weaknesses could affect more than one application. Consequently, controls must be established to prevent data from being added to, lost, or improperly manipulated during processing.

This section will help the auditor determine

--whether duties in the ADP Department are adequately separated,

--how operating procedures and controls in the computer center are implemented, and

--how access to the computer center, programs, and files is restricted to authorized personnel.

### AUDIT APPROACH

1. Complete exhibits 8 through 12.

   If the agency has more than one computer system that processes financial information, prepare a set of questionnaires for each system.

2. Complete exhibit 13, ADP Department Controls Profile.

EXHIBIT 8 EXHIBIT 8

## ORGANIZATIONAL CONTROLS QUESTIONNAIRE

Adequate separation of duties provides an effective check to insure the accuracy and propriety of system and program changes and the consistency of information flowing through the computerized system. The following questions should establish the degree of job segregation within an automatic data processing facility.

| | Yes | No |
|---|---|---|
| 1. Is the ADP function independent from other agency operations? | ____ | ____ |
| 2. Is each of the following functions performed by a different individual? | ____ | ____ |
| a. Maintaining the operating system/data management system, etc. | ____ | ____ |
| b. Systems design | ____ | ____ |
| c. Programing | ____ | ____ |
| d. Acceptance testing | ____ | ____ |
| e. Authorizing program changes | ____ | ____ |
| f. Handling source documents (keypunching, etc.) | ____ | ____ |
| g. Hardware operations | ____ | ____ |
| h. File maintenance (librarian for data and files) | ____ | ____ |
| i. Input data | ____ | ____ |

NOTES

a. Explain any "No" answers on a separate workpaper. Note alternate control procedures.

b. After gathering all information required by this questionnaire, complete the Organizational Controls portion of the ADP Department Controls Profile, exhibit 13.

EXHIBIT 9 EXHIBIT 9

## COMPUTER OPERATION CONTROLS QUESTIONNAIRE

The following questions should help the auditor determine whether the computer facility operates in accordance with prescribed processing procedures. An analysis of the responses should help the auditor determine whether operating personnel could alter computer data without user knowledge.

| | Yes | No |
|---|---|---|
| 1. Have documented procedures been established covering the operations of the data center? (If so, obtain a copy.) | ____ | ____ |
| 2. Are daily equipment operating logs maintained? | ____ | ____ |
| 3. Is computer downtime shown and explained? | ____ | ____ |
| 4. Is there an abnormal termination of job log or report for each such run? | ____ | ____ |
| 5. Does an operator maintain a daily input/output log for each job processed? | ____ | ____ |
| 6. Are these logs reviewed daily by the ADP operations manager? | ____ | ____ |
| 7. Does the ADP operations manager initial each log to indicate that the review has been performed? | ____ | ____ |
| 8. Are all operator decisions recorded in a daily log? | ____ | ____ |

EXHIBIT 9

EXHIBIT 9

| | | Yes | No |
|---|---|---|---|
| 9. | Is the console typewriter used to list: | | |
| | a. Date? | ____ | ____ |
| | b. Job name and/or number? | ____ | ____ |
| | c. Program name and/or number? | ____ | ____ |
| | d. Start/stop times? | ____ | ____ |
| | e. Files used? | ____ | ____ |
| | f. Record counts? | ____ | ____ |
| | g. Halts (programed and unscheduled)? | ____ | ____ |
| 10. | If the system does not have a console typewriter, does some other method afford adequate control and record the activities performed by both the computer and operator? | ____ | ____ |
| 11. | Is all computer time accounted for from the time it is turned on each day until it is shut down? | ____ | ____ |
| 12. | Are disposition notes entered on the console log showing corrective actions taken when unscheduled program halts occur? | ____ | ____ |
| 13. | Are job reruns recorded on the console log? | ____ | ____ |
| 14. | Is the reason for each rerun recorded? | ____ | ____ |
| 15. | Are console log pages sequentially numbered? | ____ | ____ |
| 16. | Is the console log reviewed and signed at the end of each shift by the supervisor and filed as a permanent record? | ____ | ____ |
| 17. | Are console printouts independently examined to detect operator problems and unauthorized intervention? | ____ | ____ |

EXHIBIT 9

EXHIBIT 9

| | Yes | No |
|---|---|---|
| 18. Are provisions adequate to prevent unauthorized entry of program changes and/or data through the console and other devices? | ____ | ____ |
| 19. Does some form of printout indicate every operating run performed? | ____ | ____ |
| 20. Is there a procedure to prevent superseded programs from being used by mistake? | ____ | ____ |
| 21. Does the data center use a formal mechanism for scheduling jobs? | ____ | ____ |
| 22. Has a formal method been established for prioritizing the work schedules for operations? | ____ | ____ |

NOTES

a. Explain any "No" answers on a separate workpaper. Note alternate control procedures.

b. After gathering all information required by this questionnaire, complete the Computer Operation Controls portion of the ADP Department Controls Profile, exhibit 13.

EXHIBIT 10 EXHIBIT 10

## ACCESS CONTROLS QUESTIONNAIRE

This questionnaire deals with access to the computer area, remote computer terminals, systems documentation, computer programs, and computer output. The auditor should pay particular attention to the adequacy of documented security measures surrounding the entire system.

| | Yes | No |
|---|---|---|
| **Computer Area** | | |
| 1. Is access to the computer area limited to necessary personnel? | ____ | ____ |
| 2. Are all employees required to sign an agreement regarding their role and responsibility in the department and the ownership and use of processing equipment and information within the data center? | ____ | ____ |
| 3. Do combination locks, security badges, or other means restrict access to the computer room? | ____ | ____ |
| 4. Are combinations on locks or similar devices periodically changed? | ____ | ____ |
| 5. Are account codes, authorization codes, passwords, etc., controlled to prevent unauthorized usage? | ____ | ____ |
| **Remote Computer Terminals** | | |
| 6. Are terminals adequately secured to prevent unauthorized usage? | ____ | ____ |
| 7. Are access passwords to remote terminals controlled to prevent unauthorized usage? | ____ | ____ |

EXHIBIT 10 EXHIBIT 10

| Systems Documentation | Yes | No |
|---|---|---|
| 8. Are operators denied access to program and system documentation? | ____ | ____ |
| 9. Are program listings inaccessible to computer operators? | ____ | ____ |
| 10. Do documented procedures exist for controlling systems documentation? | ____ | ____ |
| **Computer Programs** | | |
| 11. Are programs protected from unauthorized access? | ____ | ____ |
| 12. Are privileged instructions in operating and other software systems strictly controlled? | ____ | ____ |
| 13. Does the agency use automated methods (e.g., a program management system) to restrict access to applications programs? | ____ | ____ |
| **Computer Output** | | |
| 14. Is access to blank stock of critical forms (i.e., negotiable instruments, identification cards, etc.) restricted to authorized individuals? | ____ | ____ |
| 15. Have controls been established over the issuance of critical forms for jobs being scheduled for processing? | ____ | ____ |
| 16. Are copies of critical output that needs to be destroyed maintained in a secure location until the destruction process can be accomplished? | ____ | ____ |

NOTES

a. Explain any "No" answers on a separate workpaper. Note alternate control procedures.

b. After gathering all information required by this questionnaire, complete the Access Controls portion of the ADP Department Controls Profile, exhibit 13.

EXHIBIT 11 EXHIBIT 11

## FILE CONTROLS QUESTIONNAIRE

This questionnaire deals with maintenance, storage, and access to computer-processed tapes, disk packs, and other data storage media. The auditor should pay particular attention to the adequacy of documented security measures for releasing, returning, and maintaining data files.

| | | Yes | No |
|---|---|---|---|
| 1. | Is the responsibility for issuing and storing magnetic tapes and/or disk packs assigned to a tape librarian? | ____ | ____ |
| 2. | Is this duty the librarian's chief responsibility? | ____ | ____ |
| 3. | Are library procedures documented? (If so, obtain a copy.) | ____ | ____ |
| 4. | Is access to the library limited to the responsible librarian(s)? | ____ | ____ |
| 5. | Does the agency use automated methods (e.g., a file management system) to restrict access to computerized files? | ____ | ____ |
| 6. | Are all data files logged out and in to prevent release to unauthorized personnel? | ____ | ____ |
| 7. | Are tape and disk inventory records maintained? | ____ | ____ |
| 8. | Are tape and disk status records maintained? | ____ | ____ |

EXHIBIT 11

| | Yes | No |
|---|---|---|
| 9. Have external labeling procedures been documented? (If so, obtain a copy.) | ____ | ____ |
| 10. Are external labels affixed to active tapes and/or disks? | ____ | ____ |
| 11. Do labels tie in with inventory records? | ____ | ____ |
| 12. Are work or scratch tapes or disk packs kept in a separate area of the library? | ____ | ____ |

NOTES

a. Explain any "No" answer on a separate workpaper. Note alternate control procedures.

b. After gathering all information required by this questionnaire, complete the File Controls portion of the ADP Department Controls Profile, exhibit 13.

EXHIBIT 12

## DISASTER RECOVERY CONTROLS QUESTIONNAIRE

Disaster recovery controls are preventive procedures that help protect critical files, programs, and systems documentation from fire or other hazards. To the extent possible, the auditor should examine the agency's preventive procedures to determine whether data processing could be continued in the event of a computer facility disaster.

| | Yes | No |
|---|---|---|
| 1. Has the computer system operated, without major malfunction, within the last year? | ____ | ____ |
| 2. Is the data center backed up by an uninterruptible power source system? | ____ | ____ |
| 3. Have procedures been established to describe what action should be taken in case of fire and other hazards involving the data center, data files, and computer programs? | ____ | ____ |
| 4. Are these procedures implemented as defined? | ____ | ____ |
| 5. Are there provisions for retaining and/or copying master files and a practical means of reconstructing a damaged or destroyed file? | ____ | ____ |
| 6. Are sufficient generations of files maintained to facilitate reconstruction of records (grandfather-father-son routine)? | ____ | ____ |

EXHIBIT 12

| | Yes | No |
|---|---|---|
| 7. Is at least one file generation maintained at a location other than the tape storage area? | ____ | ____ |
| 8. Are copies of critical files stored at a remote location and restricted from unauthorized access? | ____ | ____ |
| 9. Are copies of operating programs stored outside the computer room? | ____ | ____ |
| 10. Are duplicate programs maintained at a remote location and restricted from unauthorized access? | ____ | ____ |
| 11. Have documented backup procedures been established with another compatible data center for running the agency's programs in the event of a natural disaster or other emergency situation? | ____ | ____ |
| 12. Are backup procedures periodically tested at the backup data center? | ____ | ____ |

NOTES

a. Explain any "No" answers on a separate workpaper. Note alternate control procedures.

b. After gathering all information required by this questionnaire, complete the Disaster Recovery Controls portion of the ADP Department Controls Profile, exhibit 13.

EXHIBIT 13 EXHIBIT 13

## ADP DEPARTMENT CONTROLS PROFILE

Agency:_____ Preparer:_____ Date:_____

Job Code:_____ Reviewer:_____ Date:_____

You must use judgment in completing this profile. Based on the questionnaire responses relating to the following control characteristics, how much risk (low, medium, high) do you believe is involved in relying on the agency's computer-processed data? Refer to appendix I for more information on assessing risk.

| CONTROL CHARACTERISTIC | Is the control in place? | Is the control effective? | Is some alternate control in place? | Is the alternate control effective? | Level of potential risk |
|---|---|---|---|---|---|
| ORGANIZATIONAL CONTROLS | | | | | |
| COMPUTER OPERATION CONTROLS | | | | | |
| ACCESS CONTROLS | | | | | |
| FILE CONTROLS | | | | | |
| DISASTER RECOVERY CONTROLS | | | | | |

EXHIBIT 13

EXHIBIT 13

Briefly describe your justification for assigning the various risk levels for each control characteristic noted on the previous page. This information should be used in preparing the Summary Memorandum on Results of Reliability Assessment.

| Control characteristic | Brief description of risk justification | Recommendation for further systems audit work |
|---|---|---|

## SECTION VI

## CONTROLS OVER COMPUTER APPLICATIONS USED TO PROCESS FINANCIAL INFORMATION

### INTRODUCTION

Application controls involve controls over (1) application design, testing, and modification, (2) origin and approval of source data, edits, and validation of data entered for computer processing, (3) processing of data through the application's computer programs, and (4) computer output. These controls help assure accurate computer processing and reduce the risk in using computer output.

This section will help the auditor determine

--how each application system was designed and modified, and whether the original design and modifications were tested,

--how data is controlled for entry into the system,

--how data is controlled during computer processing to make sure data is not added to, lost, or improperly manipulated, and

--how distribution of data output is controlled.

### AUDIT APPROACH

A basic understanding of computer system design and control characteristics can be obtained by reviewing flow charts which trace data from preparation of source documents to distribution of output reports.

1. Obtain the agency's flow chart for each computerized financial application that is to be analyzed. (Computerized financial applications were listed in exhibit 1, section I of this guide.) If no flow charts are available, interview agency officials most familiar with the system operation (usually the systems analyst in charge of the application) and diagram the sequence of data flow.

   Flow-charting techniques and formats are illustrated in the National Bureau of Standard's (NBS) "Flowchart Symbols and Their Usage in Information Processing," FIPS PUB 24.

2. Test the accuracy of the flow of data by "walking" transactions through the system and confirming with agency personnel that they perform the tasks described
3. Complete the questionnaires in exhibits 14 through 20.
4. Complete exhibit 21, Computer Application Controls Profile.

EXHIBIT 14

## APPLICATION SYSTEM INVENTORY QUESTIONNAIRE

This questionnaire should be completed for each computerized application; although the data gathered is not directly related to data reliability, it will provide the auditor with useful systems information. This document should be kept in the permanent file and updated during subsequent audits.

### Major Application(s) System

1. System name and agency's ID number _____
2. Date of initial implementation _____
3. Is the system a vendor designed system or an agency designed system? _____
4. What is system type (administrative, engineering, process control, scientific, other (specify))? _____
5. Type of processing: Batch or online? _____
6. Number of programs? _____
7. Size of largest program (bytes of storage)? _____
8. Programing language used? _____
9. Was system tested with test data, live data, or not at all? _____
10. Are system test results available? _____
11. Number of system modifications in last 2 years? _____
12. Date last modification tested? _____
13. Date of last audit or evaluation (obtain report)? _____
14. Processing frequency? _____
15. Total monthly processing hours? _____

EXHIBIT 15

## APPLICATION SYSTEM DOCUMENTATION AND PROGRAM MODIFICATION CONTROLS QUESTIONNAIRE

Comprehensive and current documentation is necessary to describe how a computer application operates. In assessing the adequacy of a system's documentation, the auditor should determine not only that the documentation reflects the application's current status, but also that the documentation is complete and in accordance with established standards. Although comprehensive documentation is normally prepared when an application is initially implemented, subsequent changes may be inadequately documented and should be given special attention by the auditor.

| | Yes | No |
|---|---|---|
| **System Documentation** | | |
| 1. Does a procedures manual cover the preparation of source documents? (If so, obtain a copy.) | ____ | ____ |
| 2. Does this manual: | | |
| a. Include control procedures? | ____ | ____ |
| b. Define data preparation responsibility? | ____ | ____ |
| 3. Is there a user's data entry/ conversion manual? (If so, obtain a copy.) | ____ | ____ |
| 4. Does this manual: | | |
| a. Include instructions for entering data? | ____ | ____ |
| b. Identify all records/fields which are subject to verification? | ____ | ____ |

EXHIBIT 15

EXHIBIT 15

| | Yes | No |
|---|---|---|
| 5. Is there an overall narrative description of the application system? | ____ | ____ |
| 6. Is there an overall flow chart of the application system? | ____ | ____ |
| 7. Is each application program documented separately? | ____ | ____ |
| 8. Does program documentation include: | | |
| a. Request for program development/ changes? | ____ | ____ |
| b. General narrative description of the program? | ____ | ____ |
| c. Systems specifications - both original and modifications? | ____ | ____ |
| d. Detailed narrative description of the program? | ____ | ____ |
| e. Detailed logic diagram or decision table? | ____ | ____ |
| f. Input record formats? | ____ | ____ |
| g. Input record descriptions? | ____ | ____ |
| h. Output record formats? | ____ | ____ |
| i. Output record descriptions? | ____ | ____ |
| j. Master file formats? | ____ | ____ |
| k. Master file descriptions? | ____ | ____ |
| l. Lists of constants, codes, and tables used? | ____ | ____ |
| m. Source program listing? | ____ | ____ |
| n. Object program listing? | ____ | ____ |
| o. Operating instructions? | ____ | ____ |
| p. Description of test plan and data used to test program? | ____ | ____ |
| q. Detailed history of program failures? | | |
| 9. Do computer operations run manuals exist? | ____ | ____ |
| 10. Are these run manuals provided to computer operators? | ____ | ____ |

EXHIBIT 15

EXHIBIT 15

| | Yes | No |
|---|---|---|
| 11. Do operators' run manuals: | | |
| a. Define input data, data source, and data format? | ____ | ____ |
| b. Describe setup procedures? | ____ | ____ |
| c. Characterize all halt conditions and actions to be taken? | ____ | ____ |
| d. Delineate expected output data and format? | ____ | ____ |
| e. Delineate output and file disposition at completion of run? | ____ | ____ |
| f. Include copies of normal console sheets? | ____ | ____ |
| 12. Do operators' run manuals exclude: | | |
| a. Program logic charts or block diagrams? | ____ | ____ |
| b. Copies of program listings? | ____ | ____ |
| 13. Is all documentation reviewed to insure its completeness and adherence to established standards? | ____ | ____ |
| 14. Are copies of all documentation stored off the premises? | ____ | ____ |
| 15. If "yes", is the stored documentation periodically compared and updated with that being used? | ____ | ____ |
| 16. Is there written evidence of who performed the systems and programing work? | ____ | ____ |
| Program Modification | | |
| 17. Are all program changes and their effective dates recorded in a manner which preserves an accurate chronological record of the system? | ____ | ____ |
| 18. Are programs revised only after written requests are approved by user department management? | ____ | ____ |

EXHIBIT 15

| | Yes | No |
|---|---|---|
| 19. Do these written requests describe the proposed changes and reasons for them? | ____ | ____ |
| 20. Are changes in the master file or in program instructions authorized in writing by initiating departments? | ____ | ____ |
| 21. Are departments that initiate changes in master files or program instructions furnished with notices or listings showing changes actually made? | ____ | ____ |
| 22. Are changes reviewed to see that they were made properly? | ____ | ____ |
| 23. Do major users approve initial system design specifications? | ____ | ____ |
| 24. Is approval for each new application program supported by a cost-benefit analysis? | ____ | ____ |
| 25. Have program testing procedures been established? | ____ | ____ |
| 26. Does the test plan include cases to test: | | |
| a. Mainline and end-of-job logic? | ____ | ____ |
| b. Each routine? | ____ | ____ |
| c. Each exception? | ____ | ____ |
| d. Abnormal end of job conditions? | ____ | ____ |
| e. Combinations of parameter cards and switch settings? | ____ | ____ |
| f. Unusual mixtures and sequences of data (i.e., multiple transactions following deleted masters)? | ____ | ____ |

NOTES

a. Explain any "No" answers on a separate workpaper. Note alternate control procedures.

b. After gathering all information required by this questionnaire, complete the Application System Documentation and Program Modification Controls portion of the Computer Application Controls Profile, exhibit 21.

EXHIBIT 16 EXHIBIT 16

## DATA INPUT CONTROLS QUESTIONNAIRE

Input controls are established to verify that data is accurately transferred from an external document into a machine-readable format. The auditor should try to make sure that source data reaches the processing programs without loss, unauthorized additions, or error.

| | Yes | No |
|---|---|---|
| 1. Have procedures been documented to show how all source data is entered and processed? | ____ | ____ |
| 2. Is there an input/output control group? | ____ | ____ |
| 3. Do the initiating departments independently control data submitted for processing using: | | |
| a. Turnaround transmittal documents? | ____ | ____ |
| b. Record counts? | ____ | ____ |
| c. Predetermined control totals? | ____ | ____ |
| d. Other? (describe)_____ | ____ | ____ |
| _____ | | |
| 4. Are duties separated in initiating department to make sure that one individual does not perform more than one phase of input data preparation (e.g., establishing new master records plus changing or updating master records)? | ____ | ____ |
| 5. Are source documents retained in a manner which enables tracing of all documents to related output records? | ____ | ____ |
| 6. Is information transcribed from the source document to some other document before being sent to the ADP department? | ____ | ____ |

EXHIBIT 16

| | Yes | No |
|---|---|---|
| 7. Does the transcribing department, if separate from other offices, independently control data submitted for processing using: | | |
| a. Turnaround transmittal documents? | ____ | ____ |
| b. Record counts? | ____ | ____ |
| c. Predetermined control totals? | ____ | ____ |
| d. Other? (describe)_____ | ____ | ____ |
| _____ | | |
| 8. Are control totals developed in the transcribing department balanced with those of initiating departments and are all discrepancies reconciled? | ____ | ____ |
| 9. Are coding, keypunching, and verifying the same document performed by different individuals? | ____ | ____ |
| 10. Does the transcribing department have a schedule, by application, that shows when data requiring transcription will be received and completed? | ____ | ____ |
| 11. Is responsibility separate to make sure that one individual does not perform more than one of the following phases of a transaction: | | |
| a. Initiating data? | ____ | ____ |
| b. Transcribing data? | ____ | ____ |
| c. Inputing data? | ____ | ____ |
| d. Processing data? | ____ | ____ |
| e. Correcting errors and resubmitting data? | ____ | ____ |
| f. Distributing output? | ____ | ____ |

NOTES

a. Explain any "No" answers on a separate workpaper. Note alternate control procedures.

b. After gathering all information required by this questionnaire, complete the Data Input Controls portion of the Computer Application Controls Profile, exhibit 21.

EXHIBIT 17 EXHIBIT 17

## DATA ERROR CONTROLS QUESTIONNAIRE

Data error controls involve the detection, correction, and resubmission of erroneous data. Adequate controls over rejected data are necessary for establishing a reliable data base and reliable computer-processed products. The auditor should carefully review the handling of data errors and rejected data to insure that corrected data is promptly reentered into the system without loss or unnecessary manipulation.

| | Yes | No |
|---|---|---|
| 1. Are controls in place covering the process of identifying, correcting, and reprocessing data rejected by the computer programs? | ____ | ____ |
| 2. Are record counts and predetermined control totals used to control these rejected transactions? | ____ | ____ |
| 3. Are all corrections and resubmissions performed in a timely manner? | ____ | ____ |
| 4. Are error corrections reviewed and approved by persons outside the data processing department? | ____ | ____ |
| 5. Do initiating departments review error listings affecting their data? | ____ | ____ |
| 6. Are erroneous and unprocessable transactions (i.e., no master record corresponding to transaction record or vice versa) rejected and written to an automated suspense file? | ____ | ____ |

EXHIBIT 17

| | Yes | No |
|---|---|---|
| 7. Does the automated suspense file include: | | |
| a. A code indicating error type? | ____ | ____ |
| b. Date, time, and some sort of initiator ID? | ____ | ____ |
| 8. Are error correction transactions matched against suspense file entries? | ____ | ____ |
| 9. Are periodic printouts of suspense file entries produced? | ____ | ____ |

NOTES

a. Explain any "No" answers on a separate workpaper. Note alternate control procedures.

b. After gathering all information required by this questionnaire, complete the Data Error Controls portion of the Computer Application Controls Profile, exhibit 21.

EXHIBIT 18 EXHIBIT 18

## BATCH PROCESSING CONTROLS QUESTIONNAIRE

Computer programs should develop control totals after processing data. These control totals should be compared with totals previously developed in the data initiating or transcribing departments. Control totals should also be compared to help make sure that data is properly processed through the entire system, i.e., run-to-run totals and trailer label checking.

| | Yes | No |
|---|---|---|
| 1. Does the data processing department independently control data submitted and processed using: | ____ | ____ |
| a. Turnaround transmittal documents? | ____ | ____ |
| b. Record counts? | ____ | ____ |
| c. Predetermined control totals? | ____ | ____ |
| d. Other? (describe) _____ | | |
| _____ | | |
| 2. Are control totals balanced with those of the initiating department and are all discrepancies reconciled? | ____ | ____ |
| 3. Are run-to-run control totals used to check for completeness of processing? | ____ | ____ |
| 4. Do the computer operating instructions for each program identify which data files are to be used as input? | ____ | ____ |
| 5. Do the operating instructions for each program clearly identify output files and storage requirements? | ____ | ____ |
| 6. Do all programs include routines for checking file labels before processing? | ____ | ____ |

EXHIBIT 18

| | Yes | No |
|---|---|---|
| 7. Are there controls in place to prevent operators from circumventing file label routines? | ____ | ____ |
| 8. Are internal trailer labels containing control totals (e.g., record counts, dollar totals, hash totals, etc.) generated for all magnetic tapes and tested by the computer program to determine that all records have been processed? | ____ | ____ |
| 9. Do computer programs include the following types of tests for validity: | | |
| a. Code? | ____ | ____ |
| b. Character? | ____ | ____ |
| c. Field? | ____ | ____ |
| d. Transaction? | ____ | ____ |
| e. Combinations of fields? | ____ | ____ |
| f. Missing data? | ____ | ____ |
| g. Check digit? | ____ | ____ |
| h. Sequence? | ____ | ____ |
| i. Limit or reasonableness test? | ____ | ____ |
| j. Sign? | ____ | ____ |
| k. Crossfooting of quantitative data? | ____ | ____ |

NOTES

a. Explain any "No" answers on a separate workpaper. Note alternate control procedures.

b. After gathering all information required by this questionnaire, complete the Batch Processing Controls portion of the Computer Application Controls Profile, exhibit 21.

TELECOMMUNICATIONS PROCESSING CONTROLS QUESTIONNAIRE

This questionnaire is concerned with two remote data entry categories--remote batch systems and online systems. Remote batch systems permit access to the computer system at prearranged times. Online inquiry and updating systems permit almost immediate access to the computer system. The auditor should determine whether

--access to the system, application programs, and files is limited to authorized personnel,

--job scheduling procedures are used so that data is processed according to some priority, and

--logs are maintained showing that transactions were entered into the system.

If the agency does not have a remote data entry network, place N/A in the Telecommunications Processing Controls Section of the Computer Application Controls Profile, exhibit 21, and ignore this questionnaire.

If the agency has a data entry network, obtain a listing of the remote locations and a copy of network documentation. This information should be placed in the permanent file and updated in subsequent reviews. The auditor should then complete this questionnaire for the central processing facility and for a sample of remote entry facilities.

EXHIBIT 19

EXHIBIT 19

| | Yes | No |
|---|---|---|
| 1. Are there documented procedures for using the telecommunications network? (If so, obtain a copy.) | ____ | ____ |
| 2. Are authorization codes required to: | | |
| a. Access the computer system? | ____ | ____ |
| b. Access the applications programs? | ____ | ____ |
| c. Perform transactions? | ____ | ____ |
| 3. Are different authorization codes required to perform different transactions? | ____ | ____ |
| 4. Are authorization codes controlled to restrict unauthorized usage? | ____ | ____ |
| 5. Are authorization codes periodically changed? | ____ | ____ |
| 6. Is a nonprinting/nondisplaying or obliteration facility used when keying in and acknowledging authorization codes? | ____ | ____ |
| 7. Is a terminal identification check performed by the computer so that various transaction types can be limited to authorized data entry stations? | ____ | ____ |
| 8. If any answers to questions 2-7 are "yes," do these security measures work as designed? | ____ | ____ |
| 9. Is there a computer program used to: | | |
| a. Send acknowledgements to the terminal? | ____ | ____ |
| b. Periodically test line and terminal operating status with standardized test messages and responses? | ____ | ____ |

EXHIBIT 19

| | Yes | No |
|---|---|---|
| 10. Is the message header used to identify: | | |
| a. Source, including proper terminal and operator identification code? | ____ | ____ |
| b. Message sequence number, including total number of message segments? | ____ | ____ |
| c. Transaction type code? | ____ | ____ |
| d. Transaction authorization code? | ____ | ____ |
| 11. Is the message header validated for: | | |
| a. Proper sequence number from the identified terminal? | ____ | ____ |
| b. Proper transaction code or authorization code for terminal or operator? | ____ | ____ |
| c. Number of message segments received equal to count indicated in header? | ____ | ____ |
| d. Proper acknowledgement from terminal at end of transmission? | ____ | ____ |
| e. Balancing of debit/credit totals derived from adding all message segments and comparing with corresponding totals in message header? | ____ | ____ |
| 12. Are there either accumulators in the terminal for keeping input totals or terminal-site logging procedures that record details of transactions? | ____ | ____ |
| 13. Are error messages returned to originating terminal, indicating type of error detected and requesting correction? | ____ | ____ |
| 14. Is a block of characters automatically retransmitted when an error is detected? | ____ | ____ |
| 15. Does an end-of-transmission trailer include: | | |
| a. Message and segment counts? | ____ | ____ |
| b. Value totals, including debit and credit? | ____ | ____ |
| c. An ending symbol? | ____ | ____ |

EXHIBIT 19

| | Yes | No |
|---|---|---|
| 16. Is a transaction log of sequence-numbered and/or time-of-day-noted transactions maintained in addition to a periodic dump/ copy of the master file? | ____ | ____ |
| 17. Is the transaction data log used to provide: | | |
| a. Part of the audit trail, including originating terminal and message ID, transaction type code, time of day that the transaction is logged, and copy of transaction record? | ____ | ____ |
| b. A transaction record for retrieval from terminal? | ____ | ____ |
| 18. At the end of the processing day, is the master file balanced, via programed routine, by subtracting current totals from start-of-day totals and comparing the remainder to transaction log values? | ____ | ____ |
| 19. Are all master file records periodically processed to balance machine-derived totals against control trailer record totals? | | |
| 20. Is the master file data log used to provide: | | |
| a. File restructuring capability? | ____ | ____ |
| b. Restart points and indicators of valid data flow? | ____ | ____ |
| c. Storage for partial dump of vital tables, including message queue allocation, polling table contents, transaction routine tables, etc.? | ____ | ____ |

NOTES

a. Explain any "No" answers on a separate workpaper. Note alternate control procedures.

b. After gathering all information required by this questionnaire, complete the Telecommunications Processing Controls portion of the Computer Application Controls Profile, exhibit 21.

EXHIBIT 20 EXHIBIT 20

## DATA OUTPUT CONTROLS QUESTIONNAIRE

Output controls help make sure that data processing results are reliable and that no unauthorized alterations have been made to transactions and records while they are in the custody of the data processing facility. The auditor should make sure that output control totals are compared against those originally established and reports distributed to appropriate users.

| | Yes | No |
|---|---|---|
| 1. Does the initiating department balance control totals generated during computer processing with those originally established and reconcile discrepancies? | ____ | ____ |
| 2. Can transactions be traced forward to a final output control? | ____ | ____ |
| 3. Can transactions be traced back to the original source document? | ____ | ____ |
| 4. Is there some means of verifying master file contents: e.g., are samples periodically drawn from those records being printed and reviewed for accuracy? | ____ | ____ |
| 5. Is there an input/output control group? | ____ | ____ |
| 6. Is the input/output control group assigned to review output for general acceptability and completeness? | ____ | ____ |
| 7. Is a schedule maintained of the reports and documents to be produced by the ADP system? | ____ | ____ |
| 8. Are there documented control procedures for distributing reports? | ____ | ____ |

EXHIBIT 20

| | Yes | No |
|---|---|---|
| 9. Is responsibility separated to make sure that one individual does not perform more than one of the following phases of a transaction: | | |
| a. Initiating data? | ____ | ____ |
| b. Transcribing data? | ____ | ____ |
| c. Inputing data? | ____ | ____ |
| d. Processing data? | ____ | ____ |
| e. Correcting errors and resubmitting data? | ____ | ____ |
| f. Distributing output? | ____ | ____ |

NOTES

a. Explain any "No" answers on a separate workpaper. Note alternate control procedures.

b. After gathering all information required by this questionnaire, complete the Data Output Controls portion of the Computer Application Controls Profile, exhibit 21.

EXHIBIT 21 EXHIBIT 21

COMPUTER APPLICATION CONTROLS PROFILE

Agency:_____Preparer:_____Date:_____

Job Code:_____Reviewer:_____Date:_____

You must use judgment in completing this profile. Based on the questionnaire responses relating to the following control characteristics, how much risk (low, medium, high) do you believe is involved in relying on the agency's computer-processed data? Refer to appendix I for more information on assessing risk.

| CONTROL CHARACTERISTIC | Is the control in place? | Is the control effective? | Is some alternate control in place? | Is the alternate control effective? | Level of potential risk |
|---|---|---|---|---|---|
| APPLICATION SYSTEM DOCUMENTATION AND PROGRAM MODIFICATION CONTROLS | | | | | |
| DATA INPUT CONTROLS | | | | | |
| DATA ERROR CONTROLS | | | | | |
| BATCH PROCESSING CONTROLS | | | | | |
| TELECOMMUNICATIONS PROCESSING CONTROLS | | | | | |
| DATA OUTPUT CONTROLS | | | | | |

EXHIBIT 21

Briefly describe your justification for assigning the various risk levels for each control characteristic noted on the previous page. This information should be used in preparing the Summary Memorandum on Results of Reliability Assessment.

| Control characteristic | Brief description of risk justification | Recommendation for further systems audit work |
|---|---|---|

## SECTION VII

## SUMMARY MEMORANDUM ON

## RESULTS OF RELIABILITY ASSESSMENT

### INTRODUCTION

The audit staff should prepare a memorandum summarizing the results of the reliability assessment which includes a re-cap of the work done, a statement about the data's reliability, and the reasons for conclusions reached.

A reliability assessment determines the accuracy and completeness of computer-processed data; it helps the auditor determine the "net risk" in relying on computer data. After completing the audit steps in previous sections of this guide, the audit staff should be able to make a more informed judgment about the data's reliability.

### WORK STEP

Prepare a summary memorandum that includes the following information:

1. Introduction
   --Briefly describe the purpose and functions of the agency or program which was reviewed.
2. Background
   --Briefly describe the computer applications used to process financial data and the significance of the information processed.

(Refer to section I, Identifying Computerized Financial Applications.)

--Describe how top management controls its ADP function. (Refer to section II, Top Management Involvement With Automatic Data Processing Functions.)

--Briefly describe the components of the agency's computer system. (Refer to section III, Background Information on ADP Department.)

--Describe the computer's impact on the agency or program reviewed (e.g., Is most information developed manually or by computer processing? Is the computer used chiefly as a large adding machine? Are computer-processed reports heavily relied on/referred to?). Where possible, provide statistics. (Refer to exhibit 14, Application System Inventory Questionnaire and exhibit 7, User Satisfaction Questionnaire--Computer-Processed Products.)

3. Work Performed

--Describe the computer operations and application systems which were reviewed.

--Explain why any computer operations or application systems were not reviewed.

--Identify and explain why any sections of this guide were not used.

4. Results

The results of the reliability assessment should clearly but concisely identify control weaknesses. When preparing the summary of results, discuss sections IV through VI separately. The following points should be covered for each section:

--A brief statement of the section's purpose.

--The primary information source for the section (i.e., official's title and/or name of office, unit, etc.).

--A discussion of the adequacy of controls (whether they are controls included in the guide, or whether they are alternate controls implemented by the agency).

--A discussion of any control weaknesses.

5. Conclusions

State your overall conclusions concerning the reliability of computer processed financial information.

6. Recommendations for Additional Audit Work

Consult the technical assistance staff and include any recommendations for further system audit work.

APPENDIX I

## ASSESSING RISK

Two primary criteria should be used to determine the degree of potential risk associated with computer-processed data: Is a control in place, and is it effective? The following chart shows possible risk levels that could be assigned to computer system controls.

### DETERMINING RISK LEVELS

| CONTROL CHARACTERISTIC | Is the control in place? | Is the control effective? | Is some alternate control in place? | Is the alternate control effective? | Level of potential risk |
|---|---|---|---|---|---|
| e.g., ORGANIZATIONAL CONTROLS | Yes | Yes | No | - | Low |
| | No | - | Yes | Yes | Medium |
| | Yes | No | Yes | Yes | Medium |
| | Yes | No | No | - | High |
| | No | - | Yes | No | High |
| | No | - | No | - | High |
| | Yes | No | Yes | No | High |

POSSIBLE EFFECT ON AUDIT WORK

| Level of potential risk | Possible Effect |
|---|---|
| Low | Unlikely that more audit tests are required. |
| Medium | Likely that more audit tests are needed unless another information source can be used or when the auditor is satisfied that the risk is acceptable. Recommendations for corrective action(s) may be possible. |
| High | Need for additional audit tests is a virtual certainty unless another information source can be used or the auditor is satisfied that the risk is acceptable. Recommendations for corrective action(s) may be possible. The auditor may want to consult with technical staff for advice or assistance. |

APPENDIX II

## GLOSSARY

Application - The system, functional area, or problem to which a computer is applied. A computer application is a set of computer instructions where either arithmetic computations or data-handling operations predominate for a specific purpose such as payroll, accounting, inventory control, or management analysis.

ASP - An extension of the operating system that provides increased automation of computer operations.

Backup - (1) The provision of duplicate records for use in case of loss. (2) Provision of duplicate computing capability in case of equipment malfunction or overloading.

Batch Control Ticket - A document accompanying a batch of transaction documents that records such information as batch number, control totals, and routing.

Batch Processing - A technique in which items to be processed are collected into groups (batched) to permit convenient and efficient processing. Note: The records of all transactions affecting a particular master file are accumulated over a period of time, then arranged in sequence, and processed against the master file; most business applications are of a batch-processing type. Sequential processing is the same as batch processing.

Batch Total - A sum of a set of items which is used to check the accuracy of operations on a particular batch of records.

CICS - A general purpose data communications monitor designed to control multiple online user terminals and applications.

Data Base - A collection of one or more files which may be integrated to retrieve specific information.

Data Dictionary - A list of data elements of a data base: e.g., in a payroll system the employee number, pay rate, hours worked; each of these comprises a data list.

Data Element - Identifies the specific field in the data. For example, an individual's name, social security number, or pay grade would each be considered a data element or field.

Data File - A collection of related records treated as a unit, e.g., all of an agency's employees' payroll records.

Document Flow - A general type flow chart which portrays the overall document flow and interrelationship throughout the organization. The emphasis will be to show the documents flowing into an organization and resultant output reports. No details of how the reports are generated are included.

File Maintenance - The activities involved in keeping a file up to date by adding, changing, or deleting data.

HASP - An extension of the operating system that provides supplementary job management, data management, and task management functions.

Header Label - A machine-readable record at the beginning of a data file containing information identifying the file and data used in file control.

Master File - A file containing relatively permanent information used as a source of reference and generally updated periodically.

Online Processing - Data processing involving direct entry of data into the computer or direct transmission of output from the computer.

Operating System - A set of programs and routines which guide a computer in the performance of its tasks.

Program Flowchart - A graphic representation for the solution of a problem in which symbols are used to represent the logical flow of the solution.

Record Layout - A diagram showing the size, position, and composition of data items which make up a record.

System Flowchart - Diagram reflecting the flow of work, documents, and operation in a data processing application.

Teleprocessing - The use of communication facilities to transmit information to and from a computer simultaneously with a varied number of users. This usually involves processing of data from remote locations.

APPENDIX II

TOTAL - A software package used for implementing and accessing a data base.

Trailer Label - A machine-readable record that appears in the last record in a file and contains information on the file which may include control totals of specific amounts, record counts, etc.

APPENDIX III

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U.S. GENERAL ACCOUNTING OFFICE

AUDIT GUIDE FOR RELIABILITY ASSESSMENT OF CONTROLS IN COMPUTERIZED SYSTEMS (FINANCIAL STATEMENT AUDITS)

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