STATEMENT 3.261

AUDITING GUIDELINE

THE EFFECTS OF AN EDP ENVIRONMENT ON THE STUDY AND EVALUATION OF THE ACCOUNTING SYSTEM AND RELATED INTERNAL CONTROLS

Introduction

1. Paragraph 5 of Statement of Auditing Standard No. 3.101 "Audit Approach" states that:

    "The auditor should ascertain the entity's system of recording and processing transactions and assess its adequacy as a basis for the preparation of financial statements."

    Paragraph 6 of the same Auditing Standard states that:

    "If the auditor wishes to place reliance on any internal controls, he should ascertain and evaluate those controls and perform compliance tests on their operation."

2. Auditing Guidelines 3.220 "Accounting systems" and 3.240 "Internal controls" provide guidance as to the procedures to be followed to comply with these basic principles. Furthermore, the draft Auditing Guideline No. 3.260 "Auditing in an EDP environment — general principles" indicates areas where additional guidance is necessary when an audit is conducted in an EDP environment, and states in paragraph 2:

    "For the purpose of this Guideline, an EDP environment exists when a computer of any type or size is involved in the processing of financial information of significance to the audit, whether that computer is operated by the entity or by a third party (e.g. a computer service bureau)."

3. The purpose of this Guideline is to provide specific guidance on the procedures to be followed in the study and evaluation of the accounting system and related internal controls in an EDP environment.

4. The use of computers for the processing of financial information may have a significant impact on an entity's accounting system and related internal controls. In this Guideline the term "financial information" encompasses financial statements.

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5. The characteristics of an EDP environment and related internal controls described in this Guideline may not always apply in a small business environment. The level of general EDP controls may be such that the auditor will place less reliance on the system of internal control. The evidence necessary to support the auditor's opinion on the financial statements may have to be obtained largely through the performance of substantive procedures.

Characteristics of EDP systems

6. The auditors should understand and consider those characteristics of EDP systems that may have an impact on the accounting system and related internal controls. Such characteristics can be described under the following categories:

Organisational structure

Nature of processing.

Organisational structure

7. In an EDP environment an entity will establish an organisational structure and procedures to manage the EDP activities. Characteristics of an EDP organisational structure include:

(a) Concentration of functions and knowledge — although most systems employing EDP methods will include certain manual operations, generally the number of persons involved in the processing of financial information is significantly reduced. Furthermore, certain EDP personnel may be the only ones with a detailed knowledge of the source of data, the methods of processing and the distribution and use of the output. It is also likely that they are aware of the internal controls present and, therefore, may be in a position to alter computer programs or data while stored or during processing. Consequently, many conventional controls based on adequate segregation of duties may not exist or may be less effective, constituting an additional risk that fraud and error may not be detected.

(b) Concentration of data — because of the nature of computer processing, data relating to the entity may be concentrated in one department (i.e. the EDP department). Therefore, in the absence of appropriate controls, there is an increased risk of unauthorised access to, and alteration of, such data.

Nature of processing

8. The use of computers will involve methods of recording and processing which are significantly different from manual systems. Two fundamental characteristics of computer systems give rise to these differences:

   (a) the operation of computer programs; and

   (b) the recording and storage of data in machine readable form.

9. The operation of computer programmed procedures has the following effects:

   (a) Consistency of performance — EDP systems perform functions exactly as programmed and are potentially more reliable than manual systems, provided that all transaction types and conditions that could occur are anticipated and incorporated into the EDP system. On the other hand, a computer program that is not correctly programmed and tested may be unreliable and may consistently process transactions or other data erroneously.

   (b) Control procedures — it is now common that controls exercised by users will usually be integrated with the operation of programmed procedures, and in some cases will be replaced by them. This can provide difficulties for auditors in adequately testing the control procedures, particularly where there is a lack of visible evidence (see (e) below).

   (c) System integration — a single input to the EDP, system may automatically update all records associated with the transaction. For example, a shipment of goods entry may update the sales and customer accounts receivable file as well as the inventory file. An erroneous entry in such a system may create errors in several financial accounts.

   (d) Systems generated transactions — certain transactions may be initiated by the EDP system and may not be evidenced by hard copy documentation. In addition the authorization of such transactions may not be specifically documented in the same way as for transactions which are initiated outside the EDP system. For example, interest may be calculated and charged automatically to customers' account balances on the basis of pre-authorized terms contained in a computer file, or assets may be transferred from one entity to another on the basis of pre-recorded instructions.

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(e) Lack of hardcopy evidence — since one of the prime objectives of an EDP system is to reduce the amount of detailed work to be carried out by the user this will often result in an absence of printout detailing processing of every transaction. Similarly data are often entered directly into the EDP system without supporting documentation, and with authorization controls being contained in computer programs (e.g. credit limit approval).

10. The recording and storage of data in machine readable form has the following effects:

(a) Accessibility of data and computer programs — data and computer programs can be directly accessed and altered (e.g. through the use of on-line terminals). Therefore in the absence of appropriate controls there is an increased risk of unauthorized access to, and alteration of, data and computer programs by persons inside or outside the entity.

(b) Transient nature — part of the transaction trail may be stored only in machine readable form or may exist only for a limited period of time.

(c) Vulnerability of data and program storage media — the physical characteristics of machine readable media, such as magnetic disks and tapes, make them more vulnerable to theft, loss, or intentional or accidental destruction.

Internal controls in an EDP environment

11. While the objectives of internal control do not change in an EDP environment the control techniques and procedures used will often differ from those used in manual or mechanical data processing environments. The characteristics of an EDP environment which have general impact were detailed in paragraphs 6 to 10. However, it should be recognised that the specific nature of a particular organization's EDP environment will significantly influence the type and extent of control techniques and the procedures used.

12. The review and evaluation of internal control in an EDP environment requires consideration of both manual procedures and computer procedures (such as controls designed within computer programs). Controls over EDP accounting systems consist of controls over the EDP function (general EDP controls) and specific controls over the accounting applications (EDP application controls).

General EDP controls

13. General EDP controls relate to the environment within which EDP applications are developed, maintained and operated, and within which the application controls operate. General EDP controls may include:

(a) Organizational and management controls — designed to establish an organizational framework over EDP activities, including:

    (i) policies and procedures relating to control functions; and

    (ii) appropriate segregation of duties (for example, preparation of input documents, programming and computer operations).

(b) Application systems development and maintenance controls — designed to provide reasonable assurance that EDP systems are developed and maintained in an authorized and efficient manner and to establish control over:

    (i) changes to application systems;

    (ii) testing, conversion, implementation and documentation of new or revised systems;

    (iii) access to systems documentation.

(c) Computer operation controls — designed to control the operation of EDP systems and to provide reasonable assurance that:

    (i) they are used for authorized purposes only;

    (ii) access to computer operations is restricted to authorized personnel; and

    (iii) errors are detected during processing.

(d) Systems software controls — designed to cover acquisition or development of systems software, including:

    (i) authorization, approval, testing, implementation and documentation of systems software modifications; and

    (ii) restriction to authorized personnel of access to systems software and documentation.

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(e) Program library security controls — designed to ensure that unauthorised changes cannot be made to programs. Procedures are necessary to control:

    (i) access to programs;

    (ii) changes to program libraries;

    (iii) separation of responsibilities; and

    (iv) protection of back-up copies of programs.

(f) Data security controls — designed to ensure that unauthorized changes cannot be made to data on files or databases. Procedures are necessary to control:

    (i) access to on-line data;

    (ii) authorization and recording of data usage;

    (iii) physical security and accountability for data; and

    (iv) use of utility programs.

14. General EDP controls are often common to all applications. However, due to the different technologies within the EDP environment and the different sensitivities of application, the emphasis to be placed on the general EDP controls may vary according to the application.

15. There are general EDP controls which are essential to the continuity of the EDP operations but which may not affect the extent of the auditor's reliance on EDP application controls. Such general EDP controls may include:

(a) adequate backup and recovery arrangements;

(b) offsite maintenance of data and computer programs;

(c) adequate protection against fire, theft, loss, intentional or accidental destruction; and

(d) adequate agreement with third parties that provide alternative processing facilities.

EDP application controls

16. Application controls relate to the transaction flows through each application. The objectives of application controls are to ensure the completeness and accuracy of the accounting records and the validity of the entries therein. They consist of a combination of manual and programmed procedures. The application control structure should take account of the whole sequence of processing from the origin of a transaction to the action taken on relevant output. EDP application controls include:

    (a) Controls over completeness of input — designed to provide reasonable assurance that all transactions are:

        (i) initially recorded;

        (ii) input to the computer;

        (iii) accepted by the computer; and

        (iv) processed only once.

    (b) Controls over accuracy of input — designed to provide reasonable assurance that each transaction is:

        (i) recorded correctly when initiated;

        (ii) where applicable, accurately transcribed from source documents on to input documents; and

        (iii) accurately converted to machine readable form and recorded on the appropriate computer data files.

    (c) Controls over the validity of transactions — designed to provide reasonable assurance that all transactions processed are appropriately authorized or checked.

    (d) Controls over the completeness of computer data file update— designed to provide reasonable assurance that all transactions input and accepted are processed completely through all stages of processing up to and including the final update of the appropriate computer data files.

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(e) Controls over output production and distribution — designed to provide reasonable assurance that:

(i) the results of processing are complete and accurate; and

(ii) output is restricted to authorized personnel.

(f) Control over the maintenance of data on machine readable media — designed to ensure that the data stored on computer data files remain correct until amended or deleted during authorized processing.

General approaches

General review

17. A review of the accounting system and internal controls may be comprehensive in a first-time audit or in a complex computer system. The review in a recurring audit, or of a relatively simple EDP system, will normally require less time.

18. Since computer applications are more easily modified during design and development than after implementation, the auditor should consider commencing the audit review during systems development. This will provide an opportunity to identify and design audit procedures, including the use of computer-assisted audit techniques (CAATs), before the new application is operational.

19. The auditor should review the accounting system to gain an understanding of the overall control environment and the flow of transactions. Such a review usually includes a survey of the organization, management, personnel and the nature of transaction processing and forms a fundamental part of the overall planning process. If the auditor wishes to rely on internal controls in conducting the audit, he should also identify and make a preliminary evaluation of those controls on which it might be effective and efficient to rely in conducting the audit.

Preliminary evaluation

20. The auditor should conduct a preliminary evaluation of those general EDP controls and EDP application controls (for example, programmed control procedures) on which it might be effective and efficient to rely in conducting the audit. Weaknesses in general EDP controls may preclude audit reliance on EDP application controls. The effectiveness of an entity's general EDP

controls tends to have a pervasive effect on the risk that undetected fraud and error might occur during the processing of transactions. It is important to note that the general EDP controls must be evaluated in the light of each significant individual application, since the impact on a specific application's controls may alter the auditor's perception of the general EDP controls.

21. If the auditor concludes that there are weaknesses in general EDP controls and/or in EDP application controls which preclude reliance on those controls, the auditor should not continue to review, document, or perform compliance procedures. Instead, having documented the reasons for not relying on internal controls, he should seek to accomplish audit objectives through reliance on such manual controls exercised by the user which exist and are appropriate combined with the performance of substantive procedures. It is probable that the auditor will have to opt for a mix of substantive and compliance testing in most instances since he will be able to rely on some, but not all, controls.

Review of general EDP controls

22. The review by the auditor includes those activities, described in paragraph 13, that are common to the overall use of EDP by the entity. The auditor considers how these common activities affect the EDP applications significant to the audit.

23. Following the general EDP review, if the auditor wishes to rely on the controls within an application, a review of the EDP application controls as described in paragraph 16 relevant to the system(s) being audited should be carried out.

Compliance procedures and final evaluation

24. In an EDP environment, the objectives of compliance procedures do not change from those in a manual environment; however, the nature, timing and extent of some compliance procedures may change. In addition to enquiry, observation and sampling procedures, the auditor may find it necessary, or may prefer, to use CAATs.

25. The effectiveness and efficiency of testing controls in an EDP environment may be improved through the use of CAATs. The use of such techniques may be necessary, for example, when the EDP system has no visible evidence documenting the performance of the programmed control procedures to be relied on. In such a case test data may be used to obtain audit evidence that data access controls in on-line systems functioned as designed.

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26. The purpose of the auditor's compliance procedures and final evaluation is to determine that the controls on which the auditor intends to rely functioned properly throughout the period of intended reliance, and that they can be relied on as planned in the preliminary evaluation. Of particular importance in an EDP environment are the controls which ensure, for example, that:

   (a) programmed control procedures operated throughout the year;

   (b) the current versions of computer programs were used;

   (c) no unauthorized alterations were made to previously approved computer programs; and

   (d) the integrity of master files was maintained.

27. If the auditor obtains evidence that the controls were not operating as designed or the compliance procedures indicate that the general EDP controls do not provide reasonable assurance that the EDP application controls functioned during the period of reliance, the auditor's final evaluation may lead to the discontinuance of the planned reliance. Instead, the auditor may seek to accomplish the audit objectives through reliance on such manual controls exercised by the user that exist and are appropriate and/or on the performance of substantive procedures.

Documentation

28. In the review and documentation of controls in an EDP environment the auditor should perform enquiry and review procedures similar to those described in paragraphs 11 to 13 of Auditing Guideline 3.240 "Internal controls". General EDP controls and EDP application controls can be identified and documented through the use of techniques such as flowcharts, questionnaires, checklists or narrative descriptions.

29. Audit documentation in respect of work carried out in an EDP environment should be designed so as to integrate with and properly support the overall audit documentation, procedures and findings.