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EDP in the Audit Workplace

EDP IN THE AUDIT WORKPLACE
An annotated bibliography

Compiled by Rennese Hogue
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INTRODUCTION

As part of the continuing progress made in the field of
technology, auditing methods have been enhanced through the
use of computers and data processing. The books, articles
and reports cited in this bibliography emphasize the use of
electronic data processing (EDP) in the audit process and
its importance to auditors, management, private business and
government.

The bibliography is divided into six sections: auditors,
EDP application systems, micros, portables, security and
software. In these sections citations are provided to
literature in EDP training, standards, various types of
audits (practical, operational, financial, etc.),
spreadsheets, DP management, fraud, password usage, security
procedures, computer assisted auditing techniques (CAAT),
software, legal issues, career alternatives, controls,
methodologies, system design, cost effectiveness,
encryption, and system audits.

The citations contained in this bibliography are to
literature published from 1983 through August 1986. Sources
for these citations include the following databases:

Accountants Index	GPO Monthly Catalog
ABI/Inform	Harvard Business Review
Computer Database	Microcomputer Index
Books in Print	NTIS
GAO Documents Database	SCORPIO

Unless appended with the editor's initials, the abstracts
were taken from these databases.

Most of the items cited in this bibliography are available
to GAO staff through the Technical Library (275-5180).

AUDITORS

1. "4GLs Add to Internal Control Issues." Computerworld
   Australia, Vol. 6, No. 48, June 1, 1984, p. 16.

   Auditors should be aware of the procedures used in
   developing reports and databases with fourth generation
   languages (4GLs). Because of the increased user involvement,
   a separation of authority and responsibility within the
   operation needs to be maintained. The development of
   information centers should be watched carefully in order to
   insure the use of proper controls.

2. "Auditing Conflict 'Necessary'." Computerworld Australia,
   Vol. 6, No. 48, June 1, 1984, p. 16.

   Walter Adamson, a speaker at Edpac '84, stated that conflict
   is necessary between data processing departments and
   auditors. Therefore, auditors must learn how to manage the
   conflict. The conflict shows that people are doing their
   jobs effectively. Ways to manage conflict without eliminating it
   are discussed.

3. Breslow, J. "PC Audit Card." PC World, Vol. 48, No. 8,
   August 1986, p. 100-103.

   PC-Audit Card is an add-in board available from Bay Computer
   Corp. for $239. The product includes a half-slot easy-to-
   install with its own 16k RAM and all attendent software
   needed to provide a mainframe-style audit trail of PC usage.
   PC-Audit contains a gate-keeping function which requires
   that users sign on with passwords, and in the background it
   keeps a detailed audit trail which can be printed out and
   translated using some slightly obscure commands. However,
   once the string of commands has been entered, it can be
   saved for execution again at a later time. Lawyers and
   accountants will find the product very useful when billing
   clients for computer time, and systems managers will also
   find it useful for a number of needs including the ability
   to control user access to PCs to certain times of the day.

4. Diesem, J. "DP Auditing: A Team Effort." Computer Decisions,
   Vol. 17, No. 4, February 26, 1985, p. 42,44,48.

   Several organizations are experiencing communication
   differences between MIS/dp managers and auditors. Although
   data processing auditing is crucial in controlling fraud and
   costs, many dp managers and auditors tend to work

independently, rather than as a team. Auditor misconceptions and realities are explored. A table shows auditing software packages' vendors, requirements, and price.

5. "Effects of Computer Processing on Financial Statement Examination Is Subject of SAS." Journal of Accountancy, August 1984, p. 34,36.

   This article gives a concise explanation as to Statement on Auditing Standards (SAS) No. 48, "The Effects of Computer Processing on the Examination of Financial Statements", effective 8/31/84. This statement supersedes SAS No. 3. Guidance is given on the audit procedures, supervision by a professional with computer-related knowledge, accounting controls, and review of general control procedures. Useful to the auditor with no computer background or little EDP procedures knowledge. (RH)

6. Farmer, D.F. "Confessions of an EDP Auditor." Datamation, Vol. 29, No. 7, July 1983, p. 193,196,198.

   EDP auditing involves verifying controls and identifying exposures. EDPA essentially looks for the possibility of loss and the degree of risk involved. Seventy per cent of the time is spent in gathering information by use of questionnaires, checking documentation, checking the source code, and testing masterfiles. Auditing software is important too. Internal auditors keep a close watch on the EDPAs to assure that they are going about their duties properly and checking the areas that most concern management. (RH)

7. Fleig, C.P. "Personal Computer Strategies: Taking Macintosh into Account." Information Systems News, No. 121, Aug. 6, 1984, p. 52,45.

   Information systems planners at Peat, Marwick, Mitchell and Company use 3500 Macintosh computers in the auditing department. They were selected for their portability and ease of use. The accounting firm plans to create a network linking the Macintoshes with its IBM Personal Computers and word processors.

8. Freeman, R. "Aftermarket Opportunity: Spreadsheet Lessons." Micro Marketworld, Vol. 8, No. 2, Jan. 28, 1985, p. 49.

   User training presents a dealer as a full-service retailer and enhances aftermarket sales. Spreadsheets require user training. Users must learn logical consistency, integrity,

and data consistency in order to use spreadsheets
successfully. Users should be taught to work up a model,
audit it, create an audit trail, establish change
procedures, and reaudit the changes.

9. Gallegos, F. EDP Audit Career Paths. Washington D.C.: U.S.
   General Accounting Office, June 20, 1983. (47 p.) Accession
   Number 121800.

   EDP career paths are discussed in terms of the future. A
   general outlook demonstrating the technical requirements and
   skills that will be needed in the year 2000 by auditors is
   discussed. These requirements will cover telecommuni-
   cations, teleprocessing, microcircuitry, systems technology,
   laws and legislation concerning privacy, security, fraud,
   interstate data transfer as well as international data
   transfer. Efforts must be made in terms of training and
   skills to see that the auditor of the future will have the
   necessary background to effectively use the advance
   technology upcoming in the audit environment. It is this
   background that will alternately advance the auditor into
   various career opportunities. (RH)

10. Gallegos, F. "Glossary of EDP Terminology," EDP
    Auditing. Pennsauken, N.J.: Auerbach Publishers, 1986.
    p. 71-01-60. (18 p.)

    Covered are more than 400 terms and their definitions, in
    relation to EDP auditing. Definitions are those that are
    commonly referred to in the DP environment and will prove
    useful to anyone needing basic EDP terminology. (RH)

11. Gallegos, F. "Planning EDP Audit Career Development,"
    EDP Auditing. Pennsauken, N.J.: Auerbach Publishers,
    1984. p. 71-03-13 (18 p.)

    Presented are guidelines for creating and implementing an
    EDP audit career. The six elements needed for a successful
    career development plan are: career path planning and
    management support, performance standards, performance
    measurement, performance counseling, training, and
    professional development. (RH)

12. Gallegos, F. and Bieber, D. "What Every Auditor Should Know
    About Computer Information Systems." EDP Auditing
    Pennsauken, N.J.: Auerbach Publishers, 1986. p. 71-03-20
    (11 p.)

    Discussed is the current use of computer-based information

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systems as a replacement for paper as a storage medium. Due to the decentralization of these computer-based information systems there is the need for auditors to have necessary skills in order to perform efficient and conclusive auditing tasks. Skills discussed include specific knowledge, training methodologies, training programs, and matching training to corporate needs. (RH)

13. Gorham, K.M. "EDP Auditors: Who Are They?" Best's Review, Vol. 85, No. 1, May 1984, p. 78,80.

Gorham gives an account of how the EDP auditor evolved from the so called "auditor," due to an altered work environment imposed by today's technology of computerized information. Functions relating to the EDP auditor encompass the areas of software system review, timely and accurate data in production systems control, review of operations procedures relating to computer operations, systems life cycle, security and all other relevant forms of control responsibilities involving EDP services.

14. Harmon, K.W. "The EDP Auditor's Role in the Microcomputer Purchase." EDP Journal, Vol. 2, 1985, p. 29-31.

The role of the EDP auditor is discussed in the purchasing of the microcomputer. Involvement is discussed at each level of purchase before and after installation of the micro in accordance with company policies. Involvement should be maintained at all levels including follow-up procedures and periodic physical inventory of hardware, software, etc. Steps are given in the purchase procedure as well as the auditors' role in this process. (RH)

15. Laberis, B. "Adapso Files Petition with SEC." Computerworld Vol. 17, No. 35, Aug. 29, 1983, p. 65-66.

The Association of Data Processing Service Organizations, Inc. (ADAPSO), in another move in its continuing battle with the Big Eight accounting firms, has filed a petition with the United States Securities and Exchange Commission (SEC) asking for a more definitive ruling relating to the ability of accounting firms to offer data processing services and products to their audit clients. Adapso has maintained for years that a certified public accounting firm's providing data processing services to its audit clients constitutes a violation of SEC and Federal Trade Commission regulations designed to ensure the integrity of external audits.

16. Loebbecke, J.K., Mullarkey, J.F. and Zuber, G.R. "Auditing in a Computer Environment." Journal of Accountancy, Vol. 155, January 1983, p. 68,70,72,74,76-78.

    This article discusses how auditors can audit in a computer environment. Described is the essential information that an auditor should look for, how the auditor can efficiently obtain information and how he or she can effectively evaluate their findings. (RH)

17. Martorelli, W.P. "Advanced Computer Technology Worries Auditors." Information Systems News, May 30, 1983, p. 18,19.

    A forum, sponsored by the Institute of Internal Auditors, dealt with the difficulty advancing technology poses to those charged with auditing computer based financial records. Auditors are also concerned about the security of corporate information assets. Auditors do not really know how to control microcomputers and the portability of floppy disks. At present, responsibilities are organized in such a way that auditors have little chance to keep up with technology.

18. Myers, D. "This DP Auditing Job Calls for More Than Auditing." Computerworld, Vol. 18, No. 17, April 23, 1984, p. 18.

    When Blue Cross/Blue Shield looks for a data processing auditor, the successful candidate must possess data processing skills (including COBOL, PL/1, and OS/JCL), a knowledge of accounting, a personality suited to dealing with defensive people, and writing ability. A data processing auditor should also be familiar with data base management and system design. At Blue Cross/Blue Shield, an auditing staff of nineteen is responsible for overseeing 1,100 data processing workers, five mainframes, twenty-seven minis, and nine word processors.

19. "New AICPA Publication." EDPACS, Vol. 11, No. 4, Oct. 1983, p. 12-13.

    A new guideline for audits of an on-line environment has been published by the American Institute of CPAs. It helps the auditor understand the on-line environment and the impact it has on auditing procedures. Several practical suggestions are given for audit strategies of on-line environments.

20. "Portables Let Auditors Bring the Office to Their Work."
    Computerworld, Vol. 19, No. 17, April 29, 1985, p. 26SR.

    Auditors at the Houston office of Price Waterhouse & Co.
    have access to a pool of about fifty Compaq portable
    computers. The auditors, who spend about seventy-five
    percent of their time on location, use the micros to check
    accounts receivable, count inventories, and check
    reconciliations with the client's bank. Price Waterhouse is
    working to make the portables used at client locations self-
    sufficient by outfitting them with all the necessary
    programs - in many cases by going to hard disk.

21. "Processing Language Expedites Auditors' Needs."
    Computerworld, Vol. 17, No. 7, Feb. 14, 1983, p. 43.

    An auditing firm, McGladrey Hendrickson, selected
    Informatics General Corp's Mark IV processing language. The
    language was used to write, test and execute the company's
    own program. The high level language allowed the auditors to
    accomplish their own data manipulation.

22. Reigle, S.F.   "Automatic Data Processing: A Career Challenge."
    GAO Review, Vol. 19, No. 3, Summer 1984, p. 11-12, 34-35.

    Due to GAO's ever changing role since it's inception in
    1921, the use of computers has become an integral part of
    its operation. Reigle gives a brief history of GAO's
    changing role and how this change has brought about the need
    for ADP skills among evaluators as well as their role in the
    ADP audit. (RH)

23. Ross, S.J. "The Ever-Changing World of DP Auditing: How to
    Adjust to It, Prepare for the Future." Computerworld,
    Vol. 17, No. 46, Nov. 14, 1983, p. 82-83.

    Data processing auditing today is a profession undergoing
    slow but steady change. In the years since it has been
    accepted as a separate area DP auditing has continued to
    receive more recognition and move up within the corporate
    hierarchy and pay scale. In the future, however, DP auditors
    must be prepared to adapt their skills and talent to new
    fields. As their salary progression levels off many DP
    auditors will move into other areas of DP management such as
    data security and data base administration. Others will be
    forced to do so by the integration of company auditing
    functions. Preparing for change is the only way DP auditors
    can successfully continue their career advancement.

24. Snow, M. "The First-Time EDP Audit." EDPACS, Vol. 11, No. 8, Feb. 1984, p. 6-8.

   The first time an audit is done in a data processing department there will probably be a lot of resistance to it. It becomes the auditor's responsibility to establish a working relationship with the auditee as well as to conduct the audit. Among the techniques for overcoming resistance to a first-time audit is establishing a liaison with the auditee. However, the auditor must take care to maintain control of the audit.

25. Sobol, M.L. "Data Communications Primer For Auditors." EDPACS, Vol. 11, No. 9, March 1984, p. 1-5.

   Data communication systems are increasing along with general data processing. It has become necessary for auditors to understand the workings of data communications systems. The basic units comprising a data communication system are reviewed. Access methods and protocols involved are discussed. The primer is aimed at giving a general understanding of a data communication system.

26. Spencer, J.B. "Hey, Auditors! Look at the Requirements Documents!' The Internal Auditor, Vol. XLI, No. 5, October 1984, p. 23-26.

   Since it is assumed that the life cycle costs increase as additional changes are made within a system it is proposed that requirement definitions be a focal point of monitoring in application design, software construction, certification and installation following thereafter. A discussion follows in which requirement documents and user statements are the source for which this application review is to proceed. It is the purpose of these documents to guide design efforts, to provide the basis for alternative control measures, and to achieve user acceptance and system adequacy. (RH)

27. Vacca, J. "Examining Auditors' Role in Data Management." Information Systems News, No. 125, Oct. 1, 1984, p. 30-31.

   The trend toward shared management of information resources means information managers must bring internal auditors into the system development process. This is the only way in which DP auditors can properly assess and monitor an organization's computer security needs. Greater involvement of auditors in system development projects will also result in better relations between users and auditors, improved credibility of auditors with information managers and users, and more successful systems.

28. Ward, G.M. and Paterson, R.D. "Surviving (and Profiting from) the Audit." Computerworld, Vol. 18, No. 39, September 24, 1984, p. 13ID-16,18.

Ideally, the goals of the MIS director, the end-user and the auditor are not conflicting. All desire solid, cost-effective controls. The auditor concentrates his attention on the adequacy of four areas: specific application controls, general or passive controls, data security features, and disaster recovery procedures. There are several ways MIS professionals can facilitate the auditing effort: by holding preaudit meetings, by reviewing audit reports, by evaluating audit retrieval software, by making auditors a part of the systems development team, by allowing auditors to attend MIS training programs, and by arranging for interdepartmental staff exchanges in order to improve complementary technical skills.

29. Weisberg, E.M. "The Rise Of The Internal Auditor." Financial Executive, February 1983, p. 32-34.

The advantages are given, from a professional standpoint, for the internal auditor based on improved skills acquired due to the Foreign Corrupt Practices Act (FCPA) of 1977. The skills referred to in this article for the internal auditor also have advantages for companies in the business world in terms of training and developing management criteria in personnel with the adequate background. A comparison is drawn between the similarities of the internal auditor and that of a good manager, the focus being on the analytical abilities of both. Detail is given as to the necessary technical skills used in the analytical process with a familiarity of EDP skills. Additional skills mentioned include effective communication, leadership abilities, supervisory accomplishments and interpersonal awareness of others. (RH)

30. Wysong, E.M., Jr. "Using the Internal Auditor for System Design Projects." Journal of Systems Management, Vol. 34, No. 7, July 1983, p. 28-32.

Auditors should be participants in all phases of system design. They can provide advice in the area of internal controls and audit trails, evaluate the progress of the project in meeting users' goals, and have the audit requirements built into the system. Auditors can contribute to the planning, design, and implementation phases.

31. Yasin, R. "DP Auditors Moving Into Managerial Field?" <u>MIS</u>
    <u>Week</u>, Vol. 4, No. 12, March 23, 1983, p. 32.

    Some DP auditors believe that there is a growing trend
    toward DP auditing managers moving into the position of
    general auditing manager of their company. Most DP auditors
    have a dual background, with either training or experience
    in both computers and financial management. This makes them
    ideal candidates for advancement into upper-level auditing
    management positions, although those in the profession admit
    that few companies are aware of the increasing importance of
    DP auditors. However, they feel that in coming years the
    integration of data processing and accounting will make DP
    auditors the most logical choices for promotion.

EDP APPLICATION SYSTEMS

32. "Accountants Develop Computer Facilities." <u>Computing (U.K.)</u>,
    Oct. 11, 1984, p. 39.

    The Auditing by Computer specialist group provides a place
    for computer professionals and accountants to exchange their
    views. It is a part of The British Computer Society (BCS).
    The Auditing group exists primarily to promote accounting
    requirements, control requirements and computer-assisted
    auditing techniques. Data processing personnel, financial
    management, auditors and security specialists are brought
    together to develop a practical approach to security.
    Software packages for accounting functions are extremely
    poor and often do not produce the necessary information to
    manage a business.

33. Armitage, J. "Control & Audit in the Small Computer
    Environment." <u>National Public Accountant</u>, Vol. 30, May
    1985, p. 30-34.

    Ongoing technology is seeing the increased usage of
    computers in the world of small business. This article
    examines control and audit in the small computer
    environment. The first half deals with the small computer
    characteristics and gives a very good definition of the
    terms microcomputer and minicomputer. The small computer
    environment is discussed by giving the reader
    characteristics common to what is referred to as a 'small
    business', and the problems imposed within the environment
    that leads to weak internal controls. The rest of the
    article details the general controls and application
    controls found in SAS No.3, but only as to how it relates to
    small computer systems used in small businesses. (RH)

34. "Assurance of Integrated Data Dictionary." Computerworld
    Australia, Vol. 6, No. 48, June 1, 1984, p. 16.

    Speaking at Edpac '84, John Hughes stated that the use of
    integrated data dictionaries could give auditors needed
    control over the information processing area. All levels of
    users would be able to easily access the same data. In order
    to be truly effective the data dictionary should be tailored
    to the company's specific needs.

35. Becker, S. "The Competent Course Designer: Writing Skill Is Not
    Enough." Data Training, Vol. 3, No. 5, April 1984, p. 24-
    25.

    While writing skills are necessary and authoring systems
    helpful, Steve Becker feels that courseware designing is the
    most important prerequisite for developing computer-based
    training courses. Competent designers should understand
    teaching concepts and be competent in interviewing and
    instructional methodology. The designer's attitude should
    reflect an emphasis on student participation. Good
    instructional design requires several years of training. An
    audit conducted by a consultant will determine if the
    programs have the proper mix of technical expertise and
    teaching technique. An audit, taking less than a month
    usually, is a report that includes recommended improvements.

36. Berman, N.C. "The Modern EDP Environment's Impact On
    Internal Controls and Auditing." GAO Review, No. 3,
    Summer 1983, p. 38-40.

    Two systems are discussed in this article: the need to
    evaluate internal control in EDP systems and the need to
    involve the auditor in the design and development of EDP
    systems. Errors in the traditional approach to auditing are
    reviewed. Through the computer, these errors are
    counteracted and better internal controls are implemented.
    (RH)

37. Bozman, J.S. "The Next Best Thing to Being There For Coopers
    & Lybrand." Information Week, No. 55, March 3, 1986,
    p. 44-45.

    Coopers & Lybrand uses 3B2 supercomputers and 6300 personal
    computers, along with 200 accountants to audit the books of
    American Telephone and Telegraph Co. Top auditing managers,
    known as partners, are aided by the Computer Audit
    Assistance Group (CAAG) support group. Some New York
    programmers are developing off-the-shelf accounting software

for large accountants, called 'engagements', while other
programmers are developing software for the AT&T auditing
teams.

38. Brill, A. "Preparing for the DP Audit." Computerworld,
    Vol. 20, No. 23, June 9, 1986, p. 103-104.

    Auditing of data processing departments causes anxiety among
    DP managers. Nearly every data processing department
    receives an audit by one or more organizations, and public
    sector workers are subject to government audits. Many
    problems seem to occur during the data processing portions
    of the audits. Several common questions are often asked
    about audits: Considering some of these questions in advance
    can result in a better relationship with the auditor.

39. Brill, A.E. "System Bugs As Time Bombs. (Auditing and
    Data Processing)." Computerworld, Vol. 20, No. 34,
    August 25, 1986, p. 67-68.

    When reviewing application systems, auditors look for an
    'internal control', meaning the programs are 100 percent
    predictable. In fact, few systems are equipped with
    internal control, but systems lacking internal control are
    potential time bombs: you don't know if the system has a
    'bug', and you don't know how or when the bug, if there is
    one, will cause a problem. If an organization does not have
    internal control, such a safeguard should be established.
    Suggestions for how to do this and a discussion of standards
    are presented.

40. Brill, A.E. "Take the Audit by the Horns." Computerworld,
    Vol. 20, No. 26, June 30, 1986, p. 69-70.

    The data processing manager has the right to be the first
    individual to view the audit draft report. The data
    processing managers should list the findings, associated
    recommendations, then review the findings. Also, the
    manager should consider several questions about the findings
    and recommendations. Although the review process is time-
    consuming, it is one of the best investments that a data
    processing manager could make, because a better final
    product is the result.

41. Brill, K.G. "Shop Talk: Audit Confirms Backup Systems."
    Computerworld, Vol. 19, No. 10, March 11, 1985, p. 103, 108.

    After investing in sophisticated disaster recovery equipment
    such as an uninterruptible power supply (UPS), many DP

managers lapse into a false sense of security. Periodic audits are necessary to confirm that the recovery system will operate in the event of an emergency. Five problems are typically discovered as a result of an audit: improper reliability engineering in the original design of the facility; incompatibilities in conditioning systems; improper equipment installation; lack of maintenance;and a failure to test backup systems.

42. Bryant, S. "Are Corporate PCs Earning Their Keep?" PC World, Vol. 4, No. 8, August 1986, p. 172-178.

The proliferation of personal computers (PCs) in the corporate environment has gone on unchecked for some time, and the moment has come when a number of companies are taking a hard look at PC costs and return on investment. Many companies are requiring that PC purchases be cost justified before the purchase can be made, and others are instituting ways of auditing PC usage and measuring returns in productivity. Some organizations, such as accounting firms, are solving PC-cost questions simply by charging clients for PC usage in order to offset the cost of the machine. There are those who feel the use of PCs is so important to the future that they see no need for cost benefit analysis and are willing to undergo the risk of proliferation to gain an unknown future advantage. The processes that a number of firms have instituted to measure and control PC costs and benefits are described including those by: American Motors Corp., with its end-user planning worksheet for cost justification; Peat, Marwick, Mitchell & Co. cost-effectiveness study; Litton Data Systems' auditing system; Security Pacific and Avon, which put justification responsibilities in the hands of the managers; and Gilbert-Commonwealth's effort to measure productivity.

43. Compton, T.R. "A Cost-Effective Internal Control System--Management's Dilemma." Journal of Systems Management, No. 36, May 1985, p. 21-25.

The author explains that due to the Foreign Corrupt Practices Act of 1977 (legalized obligation of an effective internal control system), management must be careful when analyzing the cost involved for the necessary internal control to prevent exposure. The auditor evaluates this problem by determining a cost-effectiveness analysis, through the use of such standards as those found in the Statement on Auditing Standards. Five diagrams are shown with various cost-effectiveness methodologies. (RH)

44. "Computer-Assisted Audit Techniques," 7 pages. AICPA
    Professional Standards 2. Chicago, Ill.: Commerce Clearing
    House (for AICPA), 1984 October. AU Section 8016.

    This section of the AICPA Professional Standards is
    concerned with the overall international guidelines
    associated with computer-assisted auditing, commonly referred
    to as CAAT. The section discusses the techniques when using
    a computer as an audit tool in such cases as the software,
    test data, uses of CAAT and the over all effectiveness of
    CAAT in evaluating audit data. Information is given as to
    procedures the auditor can and should maintain in
    controlling CAAT applications. (RH)

45. Cooley, J.W. and Hicks, F.O., Jr. "A Fuzzy Set Approach to
    Aggregating Internal Control Judgements." Management
    Science, Vol. 29, No. 3, March 1983, p. 317-334.

    An evaluation of internal control systems is an important
    part of auditing responsibility. An independent auditor may
    be required to render an opinion on internal controls as
    well as on the financial statements. Auditors have not yet
    accepted mathematical models for control. A linguistic model
    is suggested. It uses the theory of fuzzy sets to aggregate
    common linguistic values and returns a linguistic aggregate
    evaluation of the control system. An example is given and a
    bibliography with references.

46. "Design Primer for On-Line Data Base Systems: Message Control
    Systems, Part II." Burroughs World, Vol. 4, No. 12, December
    1983, p. 13,26,36.

    A sophisticated MCS, such as Burroughs GEMCOS, can be
    organized into general areas of functional responsibility.
    The MCS is viewed here as a single process in the mainframe.
    The MESSAGE must identify its action, format, and routing. A
    transaction is a set of data base changes by a transaction
    processor (TP) that occur in transaction state. A simple
    message causes a single transaction in the TP, while a
    complex message causes more than one transaction state. The
    unit of MCS AUDIT, the outbound message interface to the TP,
    becomes the level and sequence of the reprocessing phase of
    recovery. Normally only messages which require changes to
    the data base are audited. (Article includes diagram showing
    three examples of the interface from the SCREEN in the MCS
    to the TRANSACTION in the TP and back.)

47. Dumore, D. "An EDP Audit Risk Analysis Model." EDPACS, Vol. 12, No. 4, October 1984, p. 6-11.

An EDP audit risk model used by Marriott Corporation provides a means of assessing EDP risks in a dynamic, rapidly changing environment. The EDP audit attempts to determine a company's hardware, applications, and where the risks are. The present model is based on a survey of hardware and applications. Each device and application is assigned risk points based on specific criteria. From this, risks for the entire system can be calculated and vulnerable areas detected. In addition to risk analysis, the model affords a database of hardware and applications and provides a basis for other audits and user surveys. Tables illustrating risk calculation logic and results of hypothetical analyses are included.

48. Dunmore, D. "Auditing the Technical Services Department." EDPACS, Vol. 10, No. 11, May 1983, p. 12-13.

Systems audits are a somewhat new field for auditing. Most technical services departments have never undergone a thorough audit. Nine tips are discussed for preparing and undergoing a systems audit. After the first audit, the rest are easier.

49. "EDP Financial Audit Systems." Computers in Banking, Vol. 2, No. 8, November 1985, p. 72.

Audit products which automate the bank audit process the work of internal and external auditors and are more comprehensive than manual systems. Electronic data processing (EDP) auditors, who examine data access and security, and system usage, backup, and updating, may use some of the same products. Audit products include complete audit systems, function specific programs, and security devices, all with the purpose of supporting the reliability of a bank's financial data.

50. Ericson, B. and Trapilo, W. "Audit Me?" Computerworld, Vol. 19, No. 05A, February 6, 1985, p. 11-14.

Although each office automation audit is tailored to the specific organization, there are general features common to any audit. A variety of factors are reviewed in an audit, including the use of standards, the physical layout, storage facilities, disaster recovery plans, CPU protection, daily procedures, equipment utilization, strategic planning, software adequacy, staff training/skill levels, and staff adequacy. After gathering all the required information, the

auditor compiles it into an informational source book, the findings of which are discussed with the client. A final analysis with recommendations is then presented to management. An OA audit self-test is included. (RH)

51. Estes, B.A., Jue, S.J. and Pazina, S.L. "Can You Audit Without Pencils and Paper? Auditing With the New Technology." GAO Review, Vol. 20, No. 2, Spring 1985, p. 20-22.

    Three GAO evaluators give insight as to the flexibility and multi-use of lap-size computers and various other micros in successfully accomplishing tasks that were either unobtainable manually or too time consuming. Stated are benefits derived from the wide use of computers and the study method used for acquiring the necessary equipment for specific user needs on various audit sites. (RH)

52. Gallegos, F. and Perry, W. "The Auditor, EDP, and Federal Government." EDP Auditing, Pennsauken, N.J.: Auerbach Publishers, 1985. 71-01-40 (16p.)

    This article discusses federal legislation related to the Internal Revenue Service (IRS), Occupational Safety and Health Administration(OSHA), and the Securities and Exchange Commission (SEC) and auditing processes in respect to DP. Further discussion includes how the Federal Manager's Financial Integrity Act, the Privacy Act of 1974, the Foreign Corrupt Practices Act of 1977 and how their initiation into federal legislation affects the EDP process and public reporting regulations. (RH)

53. Gaydasch, A. "Postimplementation Audits - A Quick, Easy Approach." Data Management, Vol. 21, No. 2, Feb. 1983, 54-p. 55,69.

    The postimplementation audit evaluates the actual performance of a system. It should take place after the system has been in operation for about six to nine months. The evaluation includes a comparison of objectives with actual system outputs. In addition, it includes an assessment of user satisfaction, system efficiency, data accuracy, security, back-up and recovery, and system documentation. The audit report should include a description of changes from original objectives, problems discovered during the audit, plans for solving known problems, and recommendations.

54. Gevirtzman, R. "Controls in Automated Information Systems."
    Journal of Systems Management, Vol. 34 No. 216, January
    1983, p. 34-41.

    Peat, Marwick, Mitchell & Co. has developed Controls for
    Application System Evaluation (CASE), a methodology to set
    management priorities for controls of computerized
    information systems. Management users, systems developers
    and auditors, using CASE, can participate in an in-depth
    evaluation of application controls and establish priorities
    in four major areas - Input, Processing, Operations, and
    Output and document more than 350 control concerns in the
    process. Each of the major areas is further broken down into
    four to six subdivisions, and examples of completed
    worksheets are shown, and their development, and usefulness
    discussed.

55. Gilhooley, I.A. "Managing the Internal EDP Audit Function."
    EDPACS, Vol. 10, No. 11, May 1983, p. 1-12.

    EDP audits follow the same basic concepts as regular audits.
    The audits need to be planned, executed and controlled. The
    planning aspect covers the scope of the audit, the impact it
    will have on departments and the environment of the audit.
    The execution phase requires adequate staffing and the use
    of various auditing tools. The audit reviews the controls
    over operations and data being used. The audit itself needs
    to be limited as to how it affects the company's operations.

56. Gilliam, L. "Softline - Cooperation Key to Productive Audit."
    Computerworld, Vol. 18, No. 44, Oct. 29, 1984, p. 69,82.

    An information systems audit can be productive if the
    auditor is qualified and if the MIS manager cooperates with
    and follows the auditor's recommendations. A qualified
    auditor should have extensive DP management experience and
    good interpersonal skills. A complete audit should cover
    personnel, hardware/software, applications development, data
    center operations, user relations, and management policies
    and practices.

57. Gresham, N.K. "Planning Audit Coverage." Journal of
    Systems Management, Vol. 35 No. 5, May 1984, p. 29-32.

    Using a Victor 9000 microcomputer and a SuperCalc
    spreadsheet, a mathematical model is built to help Omark
    Industries plan its audit of forty-two locations in a three-
    year period. A priority list is established using a Weighted
    Index Value (WIV) for each audit type at each location. The
    WIV is a composite index based on relative weights assigned

to four factors of which the Relative Materiality Index
(RMI) has the highest weight. The RMI is based on relevant
financial criteria. It includes data elements applicable to
cycle audits of Expenditure, Revenue Production, Capital
Expenditures, Payroll and EDP.

58. Gunther, H.M. and Lang, B. "Conducting an Operational Audit
    of Active Files." Records Management Quarterly, Vol. 17,
    No. 4, October 1983, p. 5-10.

    Operational audits measure record-keeping management.
    Detailed planning is necessary before an audit can be
    conducted. An important question is whether the files should
    be brought to a central location or whether the audit should
    be conducted at the file locations. Representational
    sampling is advisable. All relevant personnel should be
    notified that an audit is taking place. Standardized forms
    with accession numbers and space for comments should be
    used. It is vital that the reliability and validity of the
    data are maintained. Includes bibliography. This is the
    second of a three-part series.

59. Gunther, H.M. and Lang, B. "Planning for an Operational Audit of
    Active Files." Records Management Quarterly, Vol. 17, July 1983,
    p. 30-36,38-41.

    The Snohomish County Public Utility District, Number One,
    found that careful planning for its first operational audit
    in 1981 minimized the number of contingencies and their
    impact. Phase I involved discussion of goals and objectives
    by the audit team. In Phase II, the team selected a
    population, drew a 'map' of the filing system, and developed
    active filing system standards. In Phase III, six data
    collection forms were designed and tested. They were a file
    station audit data sheet, data summary sheet, worksheet,
    audit evaluation, master data sheet, and organizational
    grid. In Phase IV, the data was analyzed for validity and
    reliability. Examples of the six data collection forms are
    shown. This is the first of a three-part series.

60. Gunther, M. and Lang, B. "Analysis and Interpretation of Data
    from an Operational Audit of Active Files." Records
    Management Quarterly, Vol. 18, January 1984, p. 5-8,10-12.

    An operational audit is a nonfinancial audit meant to
    determine a company's managerial efficiency. Statistical
    tools and techniques such as arrays, measures of central
    tendency, partitions, scaling, and indexes were used to
    analyze the performance of file stations at the Snohomish
    County Public Utility District in Everett, WA. Data about

the District's 1481 cubic feet of records was collected on
tally sheets and analyzed. Nine tables illustrate various
statistical measures, means, partitions, and frequencies;
two graphs show frequencies of record volume by type of
filing cabinet. This is the last of a three-part series.
Include references, tables and graphs.

61. Hafner, K. "Report Discusses Factors in On-Line Auditing."
    Computerworld, Vol. 17, No. 37, Sept. 12, 1983, p. 23.

    A Guideline Series report from the American Institute of
    Certified Public Accountants (AICPA) indicates that an on-
    line environment does not change the types of errors and
    irregularities encountered during an audit. The advantages
    obtained through the use of an on-line system are access to
    data files and reduction in risks that are encountered in
    manual and batch procedures. Several factors to consider
    when auditing on-line are: occurrence of certain types of
    irregularities and errors, changes in the nature and extent
    of controls, and changes in the nature of the audit trail
    and sources of audit evidence.

62. Hansen, J.V. "Audit Considerations in Distributed Processing
    Systems." Communications of the ACM, Vol. 26, August 1983,
    p. 562-569.

    The advent of the distributed system creates a new
    environment in which the EDP auditor must work. He must deal
    with multiple copies of a database and understand the access
    and reliability controls needed to maintain their integrity.
    These controls plus audit techniques and requirements are
    all discussed. Specific subjects discussed are general audit
    concerns, protection/recovery considerations, software
    provisions, performance and reliability, concurrent auditing
    techniques and the audit trail.

63. Haraf, J.M. and Lamprey, F. "Are You Preparing to Meet the
    Auditing Staff?" Computerworld, Vol. 17, April 25, 1983,
    p. 52-53.

    In preparing for the auditing of his automated accounting
    system, the DP manager should be aware that DP auditors are
    performing their audits through the computer system -
    verifying I/O controls, and internal processing functions of
    the computer. The best preparation for the audit is to
    design in input controls, processing controls, and output
    controls before the system is actually implemented. A list
    of such controls is provided.

64. Holley, C.L. and Reynolds, K. "Audit Concerns in an On-line Distributed Computer Network." Journal of Systems Management, Vol. 35, June 1984, p. 32-36.

The internal auditor should understand and participate in the development life cycle of an on-line distributed system to insure adequate controls are built into the system. New audit procedures may be required to verify the controls after the system has been implemented. A diagram of a simple distributed system is included.

65. Hubbert, J.F. "Auditing a Manufacturing Control System." EDPACS, Vol. 11, No. 1, July 1983, p. 1-6.

Manufacturing control systems differ from financial systems in their focus and components. Most auditors are not familiar with auditing manufacturing control systems. The typical subsystems of manufacturing control systems are described. Auditing procedures can be used to identify and verify the control points of the subsystem. Different auditing procedures are applicable in various subsystems.

66. Hunter, P. "Clients Find Mirror Image in Price Waterhouse." ComputerWeekly, No. 981, September 1985, p. 30-31.

Viewed as a service and a competitive edge, Price Waterhouse has embraced computer applications. It uses computers as a part of the auditing service and provides computer application and installation reviews for clients. The firm is tackling communications problems and is reviewing its information technology strategy. Personal computers play an important role. Portable computers must be IBM compatible, have a hard disk, and run LOTUS 1-2-3. The company handles security with IBM DES standard encryption and dongles, small plug-in devices required to operate microcomputers. It also conducts computer training and uses computers to keep up with the Inland Revenue.

67. Iverson, R.W. "Problems That Confound Personnel Data Bases." Computerworld, Vol. 19, February 28, 1983, p. 51SR-52,54.

Two kinds of errors occur in personnel data bases. One is simply that the data was entered improperly. The second error is that the data is not updated. The symptoms of both problems can be quickly detected. The symptoms, however, must be recognized. Some deal with accuracy and completeness. Others deal with standard reports and ad hoc reports. Audit steps which can be taken to detect problems are listed.

68. Kleinberg, E.R. "The Audit Information Center As a
    Productivity Aid." EDPACS, Vol. 11, No. 3, Sept. 1983, p.
    1-8.

    As more applications systems become computerized, audit
    efforts also increase. One company has addressed the problem
    by forming an Audit Information Center (AIC). The aim of the
    AIC is to increase effectiveness and efficiency of the audit
    staff. It is a menu-driven system which offers flexibility
    in testing and running audit programs. The implementation
    effort for AIC was minor.

69. Knaus, I. "Accounting: Technology Spells Changes for
    Accounting Audits." Computing Canada Software Report,
    Supplement to Computing Canada, Vol. 11, January 24, 1985,
    p. 8-9.

    The object on an audit has not changed, but auditing
    techniques have. An auditor must check the general and
    applications controls of a computer system and review manual
    and automated aspects of a business. Auditors may use
    packaged software or write their own programs to test client
    data. Programs are used to test data; test data validates a
    program. Personal computers perform many routine audit
    functions.

70. Koch, H.S. "Auditing On-Line Systems: An Evaluation of
    Parallel Versus Continuous and Intermittent Simulation."
    Computers & Security, Vol. 3, No. 1, February 1984, p. 9-19.

    Two techniques for auditing on-line systems are compared.
    Parallel simulation is a common auditing technique for batch
    environments. Its reliability depends on the subset of
    transactions being audited. Continuous and Intermittent
    Simulation (CIS) audits transactions as they are processed.
    It does not audit immaterial transactions. If a problem
    arises while CIS is in operation, all the necessary
    information is immediately available. Guidelines are given
    for when to select which technique.

71. Koch, H.S. "Implementing an Integrated Test Facility Audit
    Using Differential Files." Computers & Security,
    Vol. 2, November 1983, p. 242-247.

    The Integrated Test Facility (ITF) is a computer auditing
    technique considered to be the most comprehensive technique
    available. Among the advantages of ITF is that it fulfills
    the objectives of a security audit. One of its drawbacks is
    the effect the auditor's transactions have on the data base.
    The concept of using differential files to facilitate an ITF

audit is discussed. Use of differential files can reduce the cost of the audit. The integrity of the data base is not affected when an audit is done using differential files.

72. Lane, D.C. "The Operational Audit: A Business Appraisal Approach to Improved Operations and Profitability." Journal of the Operational Research Society, Vol. 34, October 1983, p. 961-973.

The operational audit is concerned with the appraisal of company effectiveness, identifying operations which are open to improvement. The history of the operational audit and its relationship to other types of audit are discussed. The scope of the operational audit is discussed and so is the manner in which assignments are typically conducted. Two case studies, one in a sales company and the other in a production company, are presented. Details of the results are provided. The relationship of operational research to operational audit is reviewed. The benefits of including operational researchers in audit teams are pointed out. Organization charts for the case studies are included.

73. Lewis, M. "Balancing the Books." Practical Computing, Vol. 7, No. 5, May 1984, p. 136-137.

Before computerizing an integrated accounting system, a requirements analysis should be done to determine which aspects of the company's accounting activities justify computerization. Not all integrated accounting packages perform the same functions. For transaction processing, an essential feature is a good audit trail. Another essential ingredient is error checking before processing. The decision between open-item accounts or balance-forward accounts must be made before choosing a sales ledger program. A purchase ledger system that prints checks may not be required by a smaller company. The nominal ledger program should produce a listing of each account with transactions and a trial balance printout which can be used as input for a profit and loss statement. Before computerizing any accounting system, an accountant should be consulted. The wrong integrated accounting system is worse than no computerized system. A diagram of the various account balances in an accounting system is included.

74. List, W. "Control and Audit of Computer Systems." Data Processing, Vol. 26, No. 3, April 1984, p. 21-24.

The advent of real-time systems has introduced new problems regarding controls. The responsibility for completeness and accuracy of information should be with the users of the

information, but most often is with those who input it.
Real-time processing also creates difficulties because the
physical order of processing is not controlled and complex
recovery procedures are involved. Control of the tables used
for access controls is often inadequate. In addition, it is
difficult to demonstrate the ongoing correctness of data
because batch totals or master file date checks are no
longer appropriate. Methods must be developed to verify and
authorize critical data after they are input but before they
are used.

75. Mar, S. "Future EDP Audit Function And Scope." EDPACS, Vol. 10,
No. 9, March 1983, p. 1-7.

Many companies have established EDP audit departments. The
time has come to address future developments in EDP
auditing. A large bank in Seattle is reviewing its auditing
division as to future requirements. It is anticipated that
the planning aspects of auditing will double by 1990.
Several research projects are underway to study future
developments such as changes in laws and regulations. Audit
functions are reviewed and new priorities established when
needed.

76. Mautz, R.K., Merten, A.G. and Severance, D.G. "Corporate
Computer Control Guide." Financial Executive, Vol. 52,
June 1984, p. 25-36.

The Corporate Computer Control Guide is divided into three
parts. Part One discusses the results of a survey with 350
corporate executives in relation to electronic data
processing. Computer failure and abuse are discussed, along
with a table of potential disasters and competitive
disadvantage concerns as presented by senior management.
Part Two provides sets of questions designed to initiate
discussions within an organization. The questions were
divided into four categories: questions for Senior
Management, questions for User Management, questions for the
Chief Information Officer, and questions for the Director of
Internal Auditing. Most management problems are, in reality,
people problems. Often these are caused by a failure to
define responsibilities. Part Three lists the
responsibilities of the Line Management, Chief Information
Officer, and the Internal Auditor.

77. McKeown, B. "Audit and Control in the HP3000/IMAGE
Environment." EDPACS, Vol. 12, No. 11, May 1985, p. 1-11.

The author has written a detailed evaluation of an audit of
the HP/3000IMAGE minicomputer system used by Weyerhaeuser.

Discussion includes distributed processing and database controls. The audit involves key risks and control techniques unique to the HP3000's MPE IV operating system, its subsystems, the IMAGE database management system, the DS 3000 telecommunication system, transaction logging systems and the data dictionary. A conclusion is given as to the adequacy of controls in data security, disaster recovery, database locking, database internal integrity checks, access to programs and utilities and operating systems control. (RH)

78. Murray, J.P. "Surviving (and Profiting from) the Audit." Computerworld, Vol. 18, September 24, 1984, p. 13ID,20-23.

A data center audit can prove to be a productive experience. It can be used to improve operational controls in application systems. Auditors can assist with automating the tape library. They can assist with training and upgrading data center staff. A well performed audit will also highlight security issues and bring those issues to the attention of upper-level management.

79. Parsons, H.L. "Auditing for Security and Control (Chapter 9)." Achieving Computer Security, 1980, p. 97-116.

This is the ninth chapter in the course. The auditing of computers is covered. Auditing is becoming more difficult as the complexity of computer systems increases. A recent approach to auditing computers is dynamic auditing. This is auditing that happens every time processing occurs. Auditing must be systemwide. Auditors must make sure that the audit trail is maintained. Auditing must be conducted through the computer. Auditors should participate in system design, implementation and postimplementation as well as dynamic auditing. A productive relationship must exist between the auditors and the EDP personnel. The role of the auditor includes observation, confirmation, inquiry, system inspection and operations analysis.

80. Perry, W.E. "How to Navigate Audit Without Excess Anxiety." Information Systems News, Oct. 3, 1983, p. 27,28.

Preparation is seen as the key to surviving an audit, a regular occurrence in data processing organizations. The three general phases of an audit explained in the article are the planning, performance and review phases. Procedures that data processors can take to facilitate an audit are also detailed. Use of audits is recommended for remedying situations which are unfavorable to the company and as a conduit for promoting worthwhile proposals.

81. Puchtel, G. "B 1000 DMSII: Designing and Developing Your Own
    System." Burroughs World, Vol. 5, May 1984, p. 6.

    The B 1000 DMSII data base is composed of options,
    parameters, audit trail, data sets and sets. By employing
    specific techniques for describing and using these
    components a more efficient data base may be developed. The
    KEYCOMPARE option should always be on because it requires
    minimal overhead and insures set integrity. SYNCPOINT
    minimum values should equal the number of update programs
    running. Audit trail buffer size should be between 1800 and
    3500 bytes. Further suggestions concerning DMSII will be
    published in articles in June and July 1984.

82. Rahn, D.V. "Confession from a Computer Professional."
    The Internal Auditor, Vol. 42, No. 3, June 1985, p. 27-29.

    Rahn, a data professional, gives steps that are necessary
    for auditing a computer system. First, be more effective by
    defining the auditors' role in an operational review.
    Second, seek objectives by contacting those affected, a
    sometimes difficult and thankless task. The author also
    gives points on how these two objectives can be attained as
    well as what the EDP operational audit should veer away
    from. Guidelines are given for auditors to follow and to
    whom and when they are to be reiterated. (RH)

83. Rushinek, A. and Rushinek, S. "Concurrent Electronic Data
    Processing Auditing Techniques in Accounting Information
    Systems." Interface: The Computer Education Quarterly,
    Vol. 4, Winter 1982-83, p. 50-55.

    Concurrent Auditing Techniques (CAT) is an auditing process.
    CAT is defined as a process which employs specific
    techniques to collect evidence concurrently with the
    occurrence of application system processing. These techniques
    provide for timely evidence collection and evidence
    evaluation during the audit. Each technique is described and
    includes Integrated Test Facility (ITAF), Test Decks,
    Tagging and Tracing (TT), Snapshot/Extended Record and
    System Control Audit Review File (SCARF). After listing the
    advantages and disadvantages of CAT, it is concluded that
    CAT is a viable, useful tool for auditing.

84. Schnatmeier, V. "Making It All Add Up." A+, Vol. 3, No. 4,
    April 1985, p. 78-80,82+.

    Peat Marwick uses the Apple Macintosh for annual audits
    under a program called Systems Evaluation Approach-
    Computerized Audit Support (SeaCas). SeaCas was introduced

in late 1982 with the Apple III. Currently the company has 4,000 personal computers for more than 7,000 employees. The applications include System 2190 proprietary software and its Financial Statement Subsystem for data retrieval on IBM and Burroughs mainframes and Microsoft's Multiplan, Chart, and File, Macwrite, Macpaint, and Macterminal personal computer software. The audit staff receives in-house training; a personal computer and printer go on every audit.

85. Schwartz, L. "Senate Panel Hits DOD Audit Policies." Electronic News, Vol. 30, No. 1497, May 14, 1984, p. 34C.

Senator William Roth, chairman of the Senate Governmental Affairs Committee, has criticized the Pentagon's contract audit policies. Roth says the Defense Contract Audit Agency (DCAA) does not properly audit contract price proposals. He cited the following DCAA deficiencies: an undue regard for the concerns of contractors; a lack of support for field auditors' positions; and delayed processing of incidents of fraud.

86. Simmons, C.M. "How to Tune a DMSII Data Base." Burroughs World, Vol. 5, No. 3, March 1984, p. 28-29,32.

The first step in optimizing resources used by a DMSII data base system during on-line processing is a system performance audit. The audit begins at the hardware and system software level and proceeds to the environmental software implementation. The final step is the evaluation of the application software implementation. The audit deals with optimization in the areas of memory utilization, processor utilization, and input/output utilization. DMSII access routines are an interface between user programs and the data base. The main function of SYSTEM/ COPY AUDIT is to copy a DMSII audit file from one media to another. The DMSII UTILITY program has two principal functions: dumping data bases to tape for back-up purposes and initiating data base recovery programs. Diagrams illustrating the function of each of these DMSII components are included.

87. Skudrna, V.J. and Lackner, F.J. "The Implementation of Concurrent Audit Techniques in Advanced EDP Systems." EDPACS, Vol. 11, April 1984, p. 1-9.

As computing systems become larger and more complex, conventional after-the-fact auditing techniques become impractical. However, these techniques continue to be used by many organizations until they install a new system. A survey was conducted of three hundred organizations about the auditing techniques that they use and that they prefer.

The results of the survey are presented and discussed. Recommendations are made concerning establishing audit procedures for advanced systems. The survey questionnaire is included.

88. Slater, K. "IRS Computers Create Letters and Headaches: Your Money Matters." Wall Street Journal, Vol. 205, No. 67, April 5, 1985, p. 19.

The IRS has begun using its computers and new sources of data to snare tax evaders who would previously only have been identified through an individual audit. In 1984 IRS computers generated 3.9 million notices questioning discrepancies between 1982 returns and income records; $1.5 billion in added taxes was assessed. A number of the notices, however, contain errors according to accountants, and these may take several rounds of correspondence to resolve.

89. Snow, M.A. "Auditing Microcomputer-Based Application Systems." EDP Journal, No. 1, 1985, p. 25-35.

Due to the sophistication of microcomputer-based systems auditors must enhance their approach to the traditional audit, the use of the PC does not end the need for extended audit testing. Thirteen objectives are discussed in outlining the evaluation of a PC-based system, a micro environment checklist is given, as well as the five stages of personal computer systems integration. (RH)

90. Sturridge, H. "The Road to Automated Auditing." ComputerWeekly, August 29, 1985, p. 16.

Peat Marwick Mitchell will be using the Apple Macintosh for its Systems Evaluation Approach Computerized Audit Support, the latest technology based system. The company has been using microcomputers since 1979. It uses computers for its own internal operations and its work with clients. Over half of its consultants work in the computer area and the company created Systems Development Group, a systems house. Peat Marwick has Prime minicomputers and a new network. It is involved in a Wang system report processing pilot project. Microcomputers have been used extensively for auditing, modeling and forecasting.

91. Sweet, F. "Settling Down to Record the Past." Datalink,
    August 13, 1984, p. 7.

    MESPIS, the imaginary maintenance equipment spare parts
    inventory system, will need past event records. Data fields
    will include the date, name and quantity so an audit trail
    is possible. A serial number sort is a necessity. A flow
    diagram shows the simplest way to handle the past record
    data.

92. Tomlinson, J. "On Budget on Time? Consultants Come in to
    Check on the Database Design." Datalink, Sept. 17, 1984, p.
    8-9.

    The implementation of the database in the project is now at
    the point of auditing. Consultants are chosen on the basis
    of cost and benefits. The reporting by the consultants took
    the form of staff interviews, and checking the data models,
    entity and function diagrams, and all the information in the
    data dictionary. The specifications were then related to the
    database as it exists. The report pointed out the necessity
    for clarification in several areas, and the lack of a
    function dependency analysis. Physical evaluation of the
    database covered general system efficiency and long term
    flexibility. Problems at this time on the project concern
    additional programming and data conversion but the link and
    system testing plans have been firmed.

93. Trigoboff, D. "FAA'S CPU Plan Ripped." MIS Week, Vol. 7,
    No. 31, August 4, 1986, p. 1-2.

    The Federal Aviation Administration's planned $3.2 billion
    advanced automation system (AAS) poses huge risks, mostly as
    a result of projected cost overruns and insufficient
    system testing, according to an auditing report by the
    General Accounting Office (GAO). The government agency's
    procurement program is based on two stages, the design
    competition and the award, and this method of awarding
    government contracts is insufficient because it omits the
    lengthy testing requirements which will uncover a defect,
    according to the GAO report. Full production of the most
    expensive elements of the AAS, including the controller
    workstation, occurs simultaneously with the development of
    the the advanced hardware and software elements. Usually,
    large purchases have a separate testing and development
    stage which occurs before the commitment to complete
    production, however the FAA wants to make its decision for
    production based on computer model simulations of system
    design and performance trade-off analysis.

94. Voysey, H. "Paper Could be Shelved." ComputerWeek, Vol. 6, No. 49, Dec. 12, 1983, p. 8-9.

Product Evaluation Archives and records can be kept off paper for the use of the librarian and the auditor in performing their daily functions. Although microfilm and video disks have been used, Philips Megadoc has aimed to explore the systems problem of record handling. Viewing is an improvement over microfilm, and the product interconnects with telephone and data networks, thereby eliminating paper.

95. Wartels, J. "Acctg. Firm Issues EDP Audit Book." MIS Week, Vol. 6, No. 25, June 19, 1985, p. 40.

Coopers & Lybrand is now offering its Handbook of EDP Auditing for sale. The book is the result of eleven years of planning by the company's computer audit assistance group and is over 1,100 pages in length. It is designed to help businesses that are becoming increasingly automated develop appropriate auditing procedures.

96. Watne, D.A. and Turnay, P.B. Auditing EDP Systems. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1984; 548p.

This publication deals principally with the audit of EDP systems and not the results produced from the systems: focus is more on the internal control structure. Auditing concepts, typical terminology and flowcharts are presented.

97. Wilder, C. "ADAPSO Warms to Big Eight Rivals." Computerworld, Vol. 20, No. 30, July 28, 1986, p. 5.

The Association of Data Processing Organizations (ADAPSO) will admit Price Waterhouse & Co. and Arthur Anderson & Co. to the organization. Though there are some critical ADAPSO members who claim there is a conflict of interest in auditing firms which provide MIS services, ADAPSO has sanctioned the companies' legitimacy in the computer services market. The organization has historically maintained that the auditing companies contracted by customers to recommend services or software decisions would recommend services provided by themselves.

98. Wilkins, B. "Ethics of Big Eight Involvement in DP Services Debated." Computerworld, Vol. 18, No. 22, May 28, 1984, p. 19.

The Independent Computer Consultant Association (ICCA) is critical of the Big Eight accounting firms that recommend

computer systems to clients while also performing audits of the same companies. There are two major issues involved. First, an accounting firm should maintain independence in order to conduct an accurate audit. The second issue concerns fairness and competition. One solution would be to bar accounting firms from performing audits on companies for which they have provided consulting services.

99. Will, H.J. "ACL: A Language Processor for Auditors." Communication of the ACM, Vol. 26, May 1983, p. 356-361.

The merging of the fields of auditing and management information systems (MIS) is explored with respect to the Audit Command Language (ACL). ACL is a prototype language to aid in developing a single standard language for auditing. Several issues are dealt with. The idea behind ACL as well as its design characteristics are discussed. Various functions and commands of ACL are discussed as well the ACL supervisor and monitor. The impact of ACL on the MIS environment is covered as well as some recommendations for research into the development of a standard auditing language.

100. Wood, C.C. "The IRM Perspective." Computerworld, Vol. 17, April 25, 1983, p. 11-ID-17.

Information Resource Management (IRM) concentrates on managing information as an organizational resource and is a synthesis of several approaches to handling information: general management (resource handling), computer systems management, library science, policy making, and planning approaches. Among the many benefits of IRM are improved support of information security, privacy, and auditing efforts. This article discusses these benefits while emphasizing the key role a corporation-wide data dictionary plays in IRM.

101. Yarberry, W.A. "Auditing the Change Control System." EDPACS, Vol. 11, June 1984, p. 1-5.

Changes in software in a computer environment can affect more than the immediate program being changed. When they are made without proper controls, the entire system may be exposed to new risks. A change control review system can oversee and minimize potential risks. The review should include authorization and documentation of changes as well as a comparison of audits before and after the changes. Changes should be implemented by someone other than the one programming the change.

102. Yarberry, W.A. "Managing the EDP Audit Function -- A Practical Approach." EDPACS, Vol. 11, May 1984, p. 6-8.

Most of the information published about EDP auditing deals with auditing methodologies. An EDP audit depends on more than methodology to be successful. It also needs effective management functioning. A successful manager is one who sets objectives, organizes, motivates, measures results and develops staff. An effective EDP audit is a result of the manager.

MICROCOMPUTERS

103. Beitman, L. "Microcomputers in the Audit Function." EDPACS, Vol. 12, September 1984, p. 4-6.

Discussed in this article are the many uses of the computer in the auditing process. Comments are given as to the usefulness of the personal computer as a management tool in developing the annual audit plan in terms of scope, location, time budgets and reports. Further discussion includes the use of microcomputers in training for computer-assisted instruction, as a word processor in generating correspondence, reports and as an audit aid in the use of financial and operational audits. (RH)

104. DiPerna, M. "Auditing a PC - It's Not So Difficult." EDP Journal, Vol. 1, 1985, p. 23-24.

Two myths associated with the use of microcomputers are identified, (1) that the computer is always right and (2) you don't audit calculators. More detail is given to spreadsheet verification as an audit test in the use of microcomputers. Six very helpful points are stated as additional check points in tracking microcomputer errors. (RH)

105. Duffy, T. and Stanford, S.E. "Coordinating Corporate Microcomputers." The Internal Auditor, Vol. 42, February 1985, p. 44-46.

Microcomputer technology development, though solving many business problems, seems to have little internal control concerns. To circumvent this problem the establishment of a position entitled microcomputer coordinator/facilitator (MCF) would have the task of analyzing the micro system.

This analysis of said system would entail checking internal controls in the areas of software, hardware, training, and staff use of accessible data. (RH)

106. During, P. "Micros May Ruin Many Businesses." ComputerWeek, Vol. 6, No. 33, August 22, 1983, p. 16.

Many first-time users of computers should base their decision to purchase on crucial software and vendor support. The company auditor should be a key figure. The extent to which operator errors are detected and prevented is the test of a superior system.

107. Fogler, R.A. "The Impact of the Microcomputer." Internal Auditor, Vol. 40, No. 2, April 1983, p. 38-41.

Microcomputers present a challenge to internal auditors. The challenge is to understand control procedures applicable to the new software so auditors can effectively advise management. The value obtained from a well-equipped microcomputer is described. The experience an internal auditing department had in the initial year of using a microcomputer is discussed. The following categories of software are considered useful: electronic worksheet programs; calendar or reminder programs; and special purpose applications. Relevant topics are discussed including control approaches and guidelines for the use of distributed computer. Hands-on experience should be obtained.

108. Gallegos, F. Auditing Using Microtechnology. 1 page (29 pages of diagrams). U.S. General Accounting Office, June 1984. (Accession number 124389)

Made up of diagrams with a one page introduction. A presentation is given showing the examples of microtechnology use in the audit environment. (RH)

109. Gallegos, F. "Microcomputers in Auditing: An Overview." EDP Auditing. Pennsauken, N.J.: Auerbach, 1985. p. 74-02-10 (6p.)

Due to the flexibility and accessibility of microcomputers, auditing techniques and audit independence have greatly improved. This article presents the microcomputer as an essential audit tool in improving audit productivity and quality due to its various uses in the audit environment. Attention is given to the benefits received by the audit team as well as the training and requirements involved in implementing its use as an audit tool. (RH)

110. Gallegos, F. and Barden, R. "Reader Survey - Impact of Micros." EDP Auditor Update, Vol. 2, 1986, p. 40-44. (Accession number 130372)

A survey among the members and recipients of EDP Auditor Update, on the use of microcomputers in EDP auditing. Background is given on the respondents and a discussion on the survey results. (RH)

111. Hardie, H.E. "Future Audit of a Day in My Life." CA Magazine, Vol. 117, p. 52-56.

A portable audit micro is the most advanced tool that an auditor can rely on for his work. The system accumulates all hours and makes a summary of work-completed-to-date and estimated-time-to-completion. All sample data and the work performed on them and the test evaluation results are recorded on electronic work papers for the review. At the year's end, all the analyses of transactions and balances are carried out by extracting the data from the client's computer system.

112. Hewes, J.J. "The Paperless Audit." Macworld, Vol. 2, No. 12, Winter 1986, p. 70-73.

Arthur Young & Company, one of the eight largest accounting firms in the country, uses a Macintosh computer network to do auditing work. The system consists of 62 Macintoshes, seven Sunol hard disks, seven Macintosh XLs, five LaserWriters, and the AppleTalk network. The AppleTalk networks at Arthur Young will be limited to twelve Macintoshes each, however, due to the network's relatively slow transmission speed.

113. Mann, S. "Mac on the Audit Trail." Macworld, Vol. 2, February 1985, p. 150-160.

When the Big Eight accounting firm of Peat, Marwick Mitchell & Co. decided to automate its auditing practice, it chose the Apple Macintosh, primarily because of its friendly user interface. In January 1984, the company announced plans to purchase over 4,000 Macs. Peat Marwick has specified three company goals for its Mac automation effort: to increase staff productivity and audit quality, to shift the burden of mundane clerical tasks from the auditor to the micro, and to enhance the company's image by employing state-of-the-art technology.

114. Opliger, E.B. "Identifying Microcomputer Concerns." <u>EDP</u> <u>Journal</u>. Vol. 1, 1985, p. 43-54.

An evaluation and comparison is presented between mainframes and the microcomputer. The concerns listed illustrate the use of the micros in an administrative capacity. A checklist for planning and policy guidelines is presented for the use of the non-EDP-oriented auditor. A second checklist is presented pertaining to EDP auditing control and security. (RH)

115. Prouty, J. "Take Charge of Micros With a Pro-Active Approach." <u>Data Management</u>, August 1984, p. 24-25,31.

The pro-active approach is one of the DP managers exercising a degree of control over the integration of corporate micros. Requirements needed by the DP manager in order to achieve better DP control are: a focus on the user, knowledge of the capabilities of microcomputer hardware and software, and training and support in microcomputer integration. All of the previous stated skills will tend to smoother DP control for the organization along with excellent professional and career opportunities for the DP manager. (RH)

116. Richardson, R. and Lifset, R. "Using Micros in Accounting and Auditing: The Arthur Young Audit Computer." <u>List</u>, Vol. 1, October 1983, p. 62-64.

The Arthur Young Audit Computer consists of an Apple III CPU with 256K RAM, a hard disk with 20M bytes of storage, and eight-inch floppy disk drives. It also has communications capabilities. The three main applications for the Audit Computer are discussed: analytical review procedures, audit administration, and data testing.

117. Roussey, R.S. "Microcomputers and the Auditor." <u>Journal of</u> <u>Accountancy</u>. No. 156, December 1983, p. 106-108.

The microcomputer, seen as a new phenomenon, introduces numerous uses for the auditor. Among these uses incorporated into the auditing process are microcomputerizing where working paper formats are input for ready access by other team members of the auditing team, thereby being able to constantly revise the previous input. New "integrated programs" are mentioned as a way of making the system more flexible and versatile. The microcomputer and its use in "audit decision support systems" cover such

areas as internal controls and audit testing on the micro. Long term auditing techniques are discussed as future trends in the auditing process. (RH)

118. Sobol, M. "Microcomputers & Auditing-Don't Make the Same Mistake Four Times." EDP Journal, Vol. 1, 1985, p. 37-41.

Sobol discusses the use of establishing certain policies and procedures needed to provide control within the microcomputer environment. Issues touched upon include acquisition of microcomputers within the audit department, central clearing houses, volume purchasing, data entry, usage limitations and security. Approached from a management point of view emphasis is given to the auditor as a needed force in the control of the microcomputers' use in today's ongoing technology.

119. Socha, W.J. "The Auditor's Own Microcomputer." EDPACS, Vol. 11, December 1983, p. 5-15.

The EDP auditor can increase audit productivity and reduce costs with a microcomputer. Many businesses are installing microcomputer systems which can be audited with a microcomputer. Some audits of mainframe systems can be done with a microcomputer terminal. In selecting a microcomputer for audit purposes, the hardware and software features are a consideration. Guidelines are given for establishing needs. As microcomputers become more portable, the auditor can become more productive.

120. Sullivan, K. "Accounting Firm Gives 5,000 Macs Thumbs-Up." Computerworld, Vol. 19, No. 2, Jan. 14, 1985, p. 1,6.

Peat Marwick Mitchell & Co., one of the nation's Big Eight accounting firms, has purchased almost 5,000 Apple Macintoshes for use in its audit departments. User response is generally enthusiastic. Some offices, in fact, report that demand has outstripped supply. A typical configuration includes 128K RAM, an external disk drive, a 1200 bit/sec modem, a numeric keypad, and bundled software.

121. Trigoboff, D. "GAO Raps Micro Buys." MIS week, Vol. 7, No. 22, June 2, 1986, p. 74.

Microcomputer acquisition by the federal government's Office of Technology Plus stores has been inefficient and costly, according to auditors for the General Accounting Office (GAO). The government agency is in favor of a more competitive procurement process for the roughly $50 million

per year market. The GAO said the government could save money by forming an award schedule made up of computer store retailers, to support the more limited use of the OTP outlets, which are operated by the General Services Administration. The report also suggests cutting the maximum order limit of the existing OTP outlets to $50,000 from $100,000. A GAO report released in 1985 said the government-operated stores were selling software which was priced 22 percent higher than the software sold on the open market, and that the microcomputers sold under multiple-award schedules were priced 15 percent higher than commercial market prices of the same equipment.

122. Using Micro Computers in GAO Audits: Improving Quality and Productivity: Technical Guideline 1. Washington, D.C.: U.S. General Accounting Office, Information Management and Technology Division, March 1986. 33 p.

This study was done to show the growing use and evolution of micro computer technology in association with the auditing processes of GAO evaluators. The guidelines cover a range of subjects, from data management, review, verification and indexing, to referencing and information storage, with an entire chapter on documenting workpapers in the audit process. Designed principally for evaluators these guidelines were accomplished through the assimilation of other papers and a previous paper entitled Microcomputer Do's and Don'ts.

123. White, Clinton E., Jr. "The Computer as an Audit Tool." Journal of Accountancy, No. 156, December 1983, p. 116-120.

The microcomputer as an audit tool is discussed in four phases of operation. The four phases, automating the audit process, basic auditing functions, advanced auditing functions, and audit module functions are all discussed as a ways of realizing significant improvements in efficiency and effectiveness in working with financial data and audit records. Included is a discussion of the significance of the microcomputer in the future and the entire auditing profession. (RH)

PORTABLE COMPUTERS

124. "Bank Uses Micro Net for Overseas Audits." Computerworld,
     Vol. 18, No. 18, April 30, 1984, p. 7SR.

     Citicorp Bank utilizes a network of fifty IBM PCs and
     thirty-five IBM-compatible Compaq portables for its world-
     wide auditing activities. The network's principle purpose is
     to provide intelligent terminal-to-mainframe capabilities,
     although it is used for stand-alone processing and for
     uploading and downloading files. The micro network, called
     Audinet, is linked to Citicorp's Global Telecommunications
     Network (GTN), a private leased line network.

125. Grzanka, L. "Automated On-Site Auditing." Portable
     Computer, Vol. 2, No. 8, August 1984, p. 46-47.

     Portable computers are now being used to help perform
     auditing functions. The President's Council on Integrity and
     Efficiency (PCIE) is using Compass computers to help prevent
     abuse in agency programs. The PCIE chose the Compass because
     of its terminal emulation capacity and its ability to access
     a large number of centralized applications programs. The
     PCIE has already more than paid for the computers in a sense
     when it discovered $1.5 million in underpayments by oil and
     gas companies to the Department of Interior. The General
     Services Administration has established a training center in
     order to teach the auditors/investigators how to use the
     computers as auditing tools.

126. "IRS Auditors Test Portables for On-Site Tax Analysis."
     Computerworld, Vol. 18, No. 35, August 27, 1984, p. 19.

     IRS auditors in the Boston area are using Grid Systems'
     Compass portable computers for on-site tax analysis. The
     Compass systems are equipped with 512K RAM, 348K of bubble
     memory, and 128K ROM, expandable to 512K. The goal of the
     project, which will involve all auditors by September 1985,
     is to eliminate the use of hand-held calculators and speed
     up the audit process. Using the computers, audit times have
     reportedly been reduced from three to four hours to fifteen
     to twenty minutes.

127. "IRS Buys Portables for Field Audits." Business Computing,
     ol. 2, No. 11, December 1984, p. 14.

     The Internal Revenue Service will incorporate the Grid
     Compass portable computer into its auditing procedures.
     Available to all agents, the portable computer will speed up

procedures, reduce the margin of error and exchange data with a host minicomputer. Presently, the agency is seeking competitive bidding for an examination system, leading to a fully integrated program by 1987.

128. "IRS to Evaluate Grid Compass." Portable Computer, Vol. 2, No. 10, October 1984, p. 12.

The Internal Revenue Service (IRS) is going to equip sixteen field agents in Massachusetts with Grid Compass portable computers. This is being done to test how portable computers can speed up the process of conducting faster, more thorough audits. The goal of the program is to begin computerizing revenue agent reports. The IRS is planning to purchase 12,000 to 17,000 portable computers for its agents by September 1985.

129. Jue, S.J. Report on Evaluation of Lapsize Computers. 7 pages; 2 appendices (43 pages). Washington: U.S. General Accounting Office, Office of Information Resources Management, July 1985. (Accession number 128117)

Evaluators at GAO's Seattle Regional Office selected 100 lapsize computers from 16 manufacturers to determine advantages and disadvantages of their computers in an audit environment. Lapsize computers were defined as portable computers weighing 20 pounds or less. Revealed was the knowledge that lapsize computers would fill many of the GAO traveling audit needs. Some of these needs included text processing, data entry and analysis, and communications. Essentially all of the lapsize computers tested are compatible with LOTUS 1-2-3, PeachText, WordPerfect, and Crosstalk. To ascertain the advantages and disadvantages of those tested they were divided into three major groups for discussion with a summation table of the results. Appendices are included giving a profile of the 16 manufacturers and their products. (RH)

130. Noble, D. "Peat Marwick Orders 120 Portable Macs." Computerworld Australia, Vol. 7, No. 19, Nov. 9, 1984, p. 5.

Peat, Marwick, Mitchell & Co. bought 120 Apple Macintosh portable computers from Apple Computer Australia. The hardware will be used to computerize audits at the office of the client. Microsoft Multiplan will be used along with other internally developed programs.

131. Saxton, W.A. and Edwards, M. "IRS Arms Auditors with Portable PC's." Office Administration and Automation, Vol. 45, No. 11, November 1984, p. 64.

The IRS is starting a mass project to provide 15,000 tax auditors with portable computers to automate functions that will reduce routine tasks, reduce overhead costs, and increase accuracy. The computers will be used primarily for spreadsheet analysis and word processing. Arthur Andersen & Company, Washington, D.C., received the contract to design an Automated Examination System. Portable computers from Grid System Corp. are the hardware of choice in a pilot project of the IRS.

132. Sillery, B. "The Taxman's Computer." Personal Computing, Vol. 9, No. 1, January 1985, p. 28.

Sixteen federal revenue agents in the Worcester and Springfield, Massachusetts offices of the Internal Revenue Service's (IRS) Boston district are using Grid Compass portable computers. The on-site tax auditors use the portables for spreadsheet analysis, word processing and other applications. The IRS is also developing the Automated Examination System which is a network of fixed and portable computers.

133. "TI Portable Compatible with Desktop Model." Leisure Time Electronics, Vol. 4, No. 1, January 1984, p. 58.

Texas Instruments has announced a portable computer which is compatible with its desktop Professional. An extensive amount of software and hardware options are available. The new portable can be used to conduct on-site analyses, word processing, and auditing. Lotus 1-2-3 and TC's Naturalink are compatible with this hardware.

SECURITY

134. Baker, R.H. "Lining up Computer Crooks." Micro Communications, Vol. 2, No. 5, May 1985, p. 18-22.

A roster of computer crime types and techniques is listed and described, based on a report done for the Department of Justice by SRI, a security consulting firm. The criminal techniques and types identified are the "Data Diddler," the "Trojan Horse," the "Salami Slicer," "Logic Bombers," the "Scavenger," the "Leak Catcher," "Piggybackers," "Impersonators," "Simulators," and "Modelers." Some techniques effective against computer criminals are offered.

Risk analysis should be conducted to determine what risks a specific company may face and how to reduce them. One specific individual can be chosen to manage data security. Security policies should be written and issued to employees. Frequent unannounced audits should be conducted. All tapes and disks should be kept in secure storage, and files should be classified according to sensitivity. A user log of all personnel using a system should be maintained, and a carefully designed password system should be established.

135. ben-Aaron, D. "CPU Audit Trail Leads to Arrest: Stock Broker is Charged With Insider Trading." Information Week, No. 66, May 19, 1986, p. 27.

Computer surveillance systems at the National Association of Securities Dealers (NASD) and the New York Stock Exchange (NYSE) produced an audit trail that led to the arrest of Dennis B. Levine. Levine is accused of trading stock on at least 54 companies about which he had inside information concerning mergers and acquisitions, leading to a personal profit of some $12.6 million. NYSE has a system called Intermarket Surveillance Information System which analyzes records of all exchanges and connects with another Sperry mainframe in Trumbull, Connecticut. Whenever unusual interest in a company is seen on the market, a signal is given, and last year the signal was sounded 11,800 times. After a media survey to see if there was public knowledge to prompt the interest, about 388 of the instances were actually investigated and about 100 were referred to a NASD office to press charges.

136. Betts, M. "OCC Orders Service Firm to Cease 'Unsafe' Practices." Computerworld, Vol. 19, No. 20, May 20, 1985, p. 23.

The U.S. Office of the Comptroller of the Currency (OCC) has ordered an unidentified firm that provides EDP services to financial institutions to cease its unsafe and unsound practices. More specifically, the unnamed firm has been ordered to provide timely and audited information to the OCC, implement a contingency plan for service disruptions, and provide adequate liquidity in advance when operating losses are identified.

137. Betts, M. "U.S. Agency Faces Probes, Boosts Security after Audit." Computerworld, Vol. 19, No. 24, June 17, 1985, p. 18.

In March 1985, the Inspector General of the Department of the Interior cited the Bureau of Land Management's (BLM) Denver computer center for inadequate controls over passwords, a lack of

audit trails, and faulty operating procedures. As a result of the inadequate security, the inspector could not vouch for the integrit, of the BLM's computerized lottery, which is used to award drilling rights for federal land tracks. It could not be determined whether the lottery had been manipulated in favor of any particular energy companies.

138. Betts, M. "U.S. to Use Program to Audit Federal Employees' Calls." Computerworld, Vol. 19, No. 12, March 25, 1985, p. 17.

The government is set to begin auditing the telephone calls of federal employees, reportedly to prevent employees from making unauthorized long distance calls. Critics in Congress argue, however, that the auditing could be used to catch government whistle-blowers and to generally squelch legitimate dissent. Government officials claim the audit will save $50 million in long distance bills.

139. Bezdek, J. "Across-the-Board Training Protects Data." Computerworld, Vol. 18, October 29, 1984, p. 1OSR.

Elaborate computer security is worthless if users are not adequately trained. An adequate computer security training program should cover physical security; logical security, such as access controls, encryption, and audit trails; administrative security; and the legal and social aspects of security, such as copyright laws, privacy legislation, and DP liability insurance. There are three sources of security training programs: seminars and workshops, media-based courses such as videotape, and printed materials.

140. Biddle, W. "Military Contract Hearing." New York Times (National Edition), April 24, 1985, p. 28.

A former Pentagon auditor told the House Energy and Commerce Subcommittee that Pratt & Whitney Aircraft Group's West Palm Beach plant billed the government for tuxedo rentals, shipping crates for ski clothes, firewood, and sports tickets. The House subcommittee, which is investigating allegations of fraudulent conduct in the weapons industry, is responsible for the freeze on government payments to General Dynamics Corporation. The Defense Criminal Investigative Service has begun an investigation into gifts given to Defense Department officials by General Dynamics.

141. "Big Eight: The Inside Track?" Computer Decisions, Vol. 17, No. 1, Jan. 15, 1985, p. 20,24,26.

Congressional committee hearings will begin in February 1985 to investigate possible conflict of interest when accounting firms audit corporations for whom they also supply software and management consulting services. The Association for Data Processing Service Organizations (ADAPSO) has also been investigating this issue, but has found no evidence of impropriety. The Big Eight accounting firms maintain that no conflict of interest exists.

142. Boswell, C. "Computer Crime - The Professional's Concern." New Zealand Interface, July 1983, p. 46.

A computer crime involves the use of a computer to perform an illegal activity or the theft of computer resources. Many large companies are concerned with the use of computer-based systems for electronic embezzlement. High quality audits and controls are required to prevent computer-assisted embezzlements. The first chapter of the Computer Auditor's Society has been established in New Zealand. This society, which is comprised of larger financial institutions, has developed a code of ethics regarding the use of computers for its members.

143. Breskin, I. "Defense Department to Conduct Audits of Prime Suppliers." Electronic Engineering Times, No. 325, April 15, 1985, p. 1,15.

Through the use of EDP auditing Richard A. Stimson, the Defense Department's director of industrial productivity, has disclosed plans to conduct two audits of prime defense contractors. Contractors will be investigated to ensure that incoming materials are tested properly. The second audit will determine if contractors are ensuring that the semiconductors they buy conform to specifications. Other steps aimed at improving weapons quality are briefly described.

144. Brown, N. Jr. "Minicomputers Control, Security, and Audit." The Internal Auditor, Vol. 40, February 1983, p. 39-42.

Brown discusses the use of the minicomputer in a small EDP organization. Control procedures involved with installation of the minicomputer include numerous internal controls consisting of : assignment responsibility, documented procedures, clear separation of programming and operating responsibilities, management and users' involvement in the design, testing and installation of the computer, computer

operation logs, authorized program changes, and a review of the control procedures. Additional discussion includes control of data when stored in a centralized data base, cost of implementing controls, whether or not the EDP system is auditable, steps involved in auditing the minicomputer and the detection of computer crime or fraud. A diagram appears at the end of the article showing audit objectives. (RH)

145. Buss, M.D. and Salerno, L.M. "Common Sense and Computer Security." Harvard Business Review, March/April 1984, p. 112-121.

Computer security encompasses both the physical security of the installation and the integrity of the data. As microcomputers, word processors, data networks, and people able to use computers proliferate in companies, the threat of increased tampering with computer data banks and programs rises dramatically. Auditing can play an important role in checking the internal control of computer security. For some companies, it may be useful to expand the role of the audit committee of the board, reevaluate measures of audit performance, and involve auditors more in important decisions. Risk analysis can be a useful tool in helping to make choices about computer security.

146. "Charge of Underbid by Comp Sciences Cleared in Audit." Electronic News, Vol. 30, No. 1523, November 12, 1984, p. 15.

In 1982, Computer Sciences Corp. was awarded a $58.2 million contract for an automated financial system for the Navy's industrial fund installations. Government auditors have now ruled that the firm did not intentionally underbid this contract. The auditors cited similar bids by two other bidders. The total cost of this system is now expected to reach $129 million.

147. Cook, J.R., Johnston, M.A., Morgan, G.W. and Mattord, H.J. "DPMA Members Intensify Data Security Efforts Survey Results Reveal." Data Management, Vol. 22, June 1984, p. 33-37.

A survey of fifty randomly selected DPMA chapters covered six data security areas. The DPMA members ranked security concerns, in order of concern from highest to lowest, as access to facilities and equipment, backup and recovery, programming errors and omissions, disaster protection, embezzlement and fraud, and auditing. The overall effectiveness ratings in the installations were 'good to excellent' except for auditing, which was rated 'poor'. Most methods of security were used in the majority of installations except for separate control groups for

software testing, procedures for locating the data processing site, formal contingency master plans, and auditing. Tables show the results of the survey.

148. Dallas, D.A. "Source and Object Compare Audit Software." EDPACS, Vol. 11, No. 2, August 1983, p. 1-7.

One tool of security auditors is software which compares object codes of programs. Source code can be understood and reviewed by an auditor without a great deal of difficulty. Object code is more difficult to understand. Several ways are discussed of ensuring that the object code in use accurately reflects the source code presented. The verification process for auditing is reviewed.

149. Deitz, L. "Computer Security in the Micro Age: The Alec Group." Computers & Electronics, Vol. 22, June 1984, p. 68-70,101.

The widespread use of personal computers in business creates a problem of maintaining data integrity during uploading and downloading operations. As information is sent through layers or locations within an organization, changes could be made without the original sender being aware of them. Two parallel and independent audit trails, one of the traditional type and the other through data processing, should help preserve data integrity. Small businesses should safeguard against the loss of data; adequate back-up is a must. Also, a back-up operator may be necessary. This ensures that more than one person knows how to operate the small business' computer system. A list of some computer security system sources is included.

150. "DP Crime: Where There's a Will, There's a Way." Computerworld, Vol. 17, December 26, 1983, p. 53-54.

While no computer system is absolutely secure, there are specific steps that can be taken to reduce the risk. Among these are: assigning a manager to deal specifically with security, issuing a written policy on security, instituting regular and unannounced DP audits, and developing security teams that involve the entire organization, not only the DP department. The Research Institute of America recommends the following procedures: files should be classified according to their degree of sensitivity, DP managers should control the number of personal computer users, and passwords should be carefully designed and controlled. A partial listing of available hardware and software security products is given.

151. "The External Auditor as Privacy Inspector." Information Age, Vol. 5, July 1983, p. 131-142.

Proposed legislation in England requires that users of systems dealing with personal data register with the government and have a privacy audit on their systems. A study has been conducted to determine the impact of privacy audits on six businesses. The results indicate the inspections would be less costly if done as part of a financial audit. Thirteen privacy principles based on the Younger Report were used in assessing the organizations. The procedures and findings of the inspections are given.

152. Ferrey, J.B. "Auditing the Operating System." EDPACS, Vol. 10, No. 10, April 1983, p. 1-8.

The operating systems of computers need to undergo auditing along with other aspects of computer facilities. The operating system itself oversees the execution of other software. It needs to have controls to limit its exposure to system abuses. The audit of an operating system should review the procedures for making modifications and the security the system provides for programs and data. The audit program should test the system's integrity and access controls. Certain tests can indicate security hazards.

153. Gallegos, F. and Basica, D. "Microcomputer Security: Audit Problems and Solutions." Journal of Accounting and EDP, Vol. 1, No. 4, Winter 1986, p. 49-56.

The authors approach micro security from three points, (1) physical security of hardware, (2) physical security of data and software and (3) data integrity. A discussion follows as to necessary procedures needed to alleviate unnecessary risks in exposing secured data or theft of data, hardware and software involved. A partial listing is attached naming software and hardware available for micros. (RH)

154. Glatzer, H. "Police Ask Vendor to Recall Security Package." Software News, Vol. 5, No. 4, April 1985, p. 28.

A new security-oriented software package has been withdrawn from the market at the request of law enforcement agencies such as the FBI and Interpol. The Audit program, which monitors all input and output of a system, has been deemed 'too powerful' for ordinary users. A stripped-down version will be marketed commercially and the regular version will go to the legal agencies. The Audit program, from Clyde Digital Systems, runs on DEC VAX minicomputers.

155. "Goal System Is Alert to Needs for Security." Computing
     Canada, Vol. 10, No. 10, May 17, 1984, p. 25.

     Alert/CICS is a security system for IBM mainframes running
     CICS. It is from Goal Systems International Inc. Audit
     trails, the facility for not displaying fields, no need to
     change user programs, and facilitation of the implementation
     of a complete security hierarchy in an on-line environment
     are its features.

156. Henkel, T. "Hired Hacker Not New Phenomenon to Geisco."
     Computerworld, Vol. 17, No. 40, October 3, 1983, p. 13.

     General Electric Information Services Co. (Geisco), a
     computer time-sharing company, has employed a consultant to
     test the security of their Mark III and IBM-based Mark 3000
     systems. The consultant is provided with firm manuals and
     descriptions to provide him with enough information about
     these systems to break security. An outside audit firm is
     also employed to insure that the passwords of ex-employees
     and invalid users are locked out of the systems.

157. Holley, C.L. and Millar, F. "Auditing the On-Line, Real-Time
     Computer System." Journal of Systems Management, Vol. 34,
     January 1983, p. 14-19.

     'General' controls, as opposed to application controls, are
     reviewed. The types of on-line systems described are 1. data
     entry, 2. data collection, 3. message switching, and 4. file
     updating. Physical safeguards (guards, locks, passwords and
     identification control) and logical controls (management control
     logs, level and type of user controls, selective file access
     and update) initiate timely reports to the auditor. Other
     controls described in detail are audit trails, transmission
     error control, data file controls, output controls, system
     failure and recovery methods. These changes in the approach
     to testing (an auditing technique) are suggested- 1.
     Tagging, 2. Real-Time Notification, 3. Audit Log, 4.
     Extended Records and Monitoring, and 5. Integrated Test
     Facility.

158. Johnson, B. "Warning Issued on DP-End User Collusion."
     Computerworld, Vol. 17, No. 19, May 9, 1983, p. 14.

     Law and Business Inc. offers pointers to determine whether
     there might be abuse or collusion by data processing
     personnel. Dramatic changes in life style may indicate that
     there is a problem. An official audit is always urged if
     there is reason for concern. Caution must be exercised
     before any personnel are confronted or accused.

159. Johnston, R.E. "How to Select and Implement a Data Security Product." Infosystems, Vol. 31, No. 2, February 1984, p. 78-80.

    The second article in a three-part series on data security deals with passwords and audits. Three basic methods for password management are central issue, local issue and individually chosen passwords. In each case, some procedure is needed to ensure the user and the system know the new password and that others do not. An examination of the elements of the system is needed to determine effective password procedures. Some method is needed to allow auditing of the system without compromising password integrity.

160. Karten, H. "DP User Tells All." Systems User, Vol. 4, No. 3, June 1983, p. 1,15-16.

    Some data processing shops are not as secure as they should be. While a computer system may be impenetrable from without, often programmers within a shop may have unnecessary access to the computer and its software. Furthermore, auditing is sometimes ineffective.

161. Kelman, A. "How to Avoid the Frauds." ComputerWeekly, August 15, 1985, p. 23.

    The use of computers in small businesses can reduce costs and capital investments, lower staff numbers and cut down on fraud. At the same time, businesses give up direct accounting control. A business must work with dealers and select a software system, which may not exactly fit the company's needs and may not have enough security. Physical, administrative and technical controls must be implemented to reduce the danger of fraud. Of all the types of fraud, the most spectacular is data and program alteration by systems programmers. Small businesses should be wary of system programmer applicants. Applications programmers cannot change operations systems, but can change data processing programs. Companies need audit controls to stop this.

162. Kirchner, J. "Hackers Could Undermine Confidence in Federal Agencies, House Panel Told." Computerworld, Vol. 17, No. 43, October 24, 1983, p. 4.

    The activities of computer hackers threaten to undermine the confidence of citizens and corporations in the ability of the government to maintain computer security. The General Accounting Office informed a Senate subcommittee that serious problems exist in all aspects of government

information security including policy gaps, management deficiencies, and inadequate internal audit capabilities causing accidental and intentional information losses.

163. Kneer, D.C. and Lampe, L.C. "Distributed Data Processing: Internal Control Issues and Safeguards." EDPACS, Vol. 10, No. 12, June 1983, p. 1-14.

A distributed data processing (DDP) environment can be thought of as a tree structure, where low-level nodes communicate with higher nodes. A typical DDP environment can have exposures leading to potential losses of information if adequate controls are not implemented. A survey of DDP auditors has been conducted on the security aspects of DDP environments. Specific areas of exposure potentials and the impacts they might have on auditing were ranked. Control measures to limit exposure were ranked in relation to their effect on auditing and cost of implementation.

164. Leibholz, S.W. "Legislative Action Makes Data Protection Hard to Ignore." Computerworld, Vol. 18, October 29, 1984, p. 2SR,4.

Both the Department of the Treasury and the Department of Defense recently issued directives requiring all institutions handling government funds or sensitive data to implement approved security systems. Any adequate security system, in its hardware or its software must incorporate five basic functions: communications encryption, file encryption, access guarding, user and terminal authentication, and transaction authentication with audit trails. Organizations should realize that failure to implement available security techniques could result in the filing of negligence law suits.

165. Levin, S.E. "Security Possible in Communications Networks." Computerworld, Vol. 17, January 31, 1983, p. 6SR,8,10.

The key to network security is access control. There are several security methods that should be utilized, including passwords, audit trails, and encryption. To make certain the security controls are functioning properly, it is advisable to conduct frequent mock penetration attacks on the system.

166. Manuel, T. "Computer Security." Electronics, Vol. 57, No. 5, March 8, 1984, p. 121.

Public attention to computer crime is leading hardware and software vendors to include security features such as audit

trailing, secure operating system kernels and encryption of
data in their products. This security must foil the efforts
of hackers and criminals alike. The best security systems
have access control in many different areas.

167. Mar, S. "EDP Security and EDP Audit Teamwork." COM-SAC,
Computer Security, Auditing & Controls. Vol. 11, No. 1,
January 1984, p. A1-A4.

Working together, EDP security and EDP audit achieve shared
benefits including: improved security controls, increased
information resources, system security, sharing of knowledge
and a mutual support system. Difficulties arising out of
this control system can include users confusion of EDP
security and EDP audit, emotional resentment by EDP security
when reviewed by the EDP audit staff, and possibly even
disagreements on job projects. Case studies are presented to
illustrate difficulties when EDP security and EDP audit lack
understanding of the other function. A hierarchical scheme
shows how an effective operation can be attained. (RH)

168. Moulton, R.T. "Network Security." Datamation, Vol. 29, No.
7, July 1983, p. 121,122,124.

Communications networks provide a security advantage for
multi-site organizations with distributed data processing
because widely scattered facilities are less vulnerable to
power outage, natural disaster, and attack than one central
facility. Security officers should consider data security
policy, risk vulnerability assessment, access control and
authorization, data encryption, and audit and reporting.
Lack of security policy may prevent prosecution of accused
computer abusers. The computer equipment surrounding the
network must be in a protected environment. The security of
the entire information system, including the network, must
be thoroughly audited by qualified personnel.

169. Murray, W.H. "Computer Security: Observations on the State
of the Technology." Computer & Security, Vol. 2, January 1983,
p. 16-23.

The state of technology concerning audit, control and
security is more advanced than the application of that
technology. In part, the lag results from lack of knowledge
about the new technologies. Advances in shared storage,
addressability, states of privilege, shared registers,
authorization mechanisms, journals and logs, end-user

authentication, external controls, cryptography, transaction-driven systems and application development are summarized. Each can be used in audit, control and security applications.

170. "Omni Expansion Board Protects Data Access." MIS Week, Vol. 5, No. 48, November 28, 1984, p. 19.

Omni Marketing Concepts announced the Micro-Guard, a new expansion board for complete security in IBM personal Computers. Audit tracking of users will be available with the product.

171. Perry, T.S. and Wallich, P. "Can Computer Crime Be Stopped?" IEEE Spectrum, Vol. 21, No. 5, May 1984, p. 34-45.

Information stored in computers is a valuable resource and the proliferation of microcomputers has brought new problems in protecting this information and computer systems. Automated aids to systems penetration, scanning, using microcomputers and modems can easily foil some of the largest systems. Password security is commonly used, but often can be easily broken. Trojan horses simulating the log-in program can provide trespassers with access to privileged areas of the system. Computer systems also can be penetrated using trap doors. Controls and cross-checking are used to detect crimes where data is modified even before entering the computer. Audit trails aid in tracking computer criminals. Such sophisticated investigation techniques are difficult for the average police officer and often cause complicated legal problems. Complicated security systems are available, but often are not used because they diminish the user-friendliness of the system. Sixteen specific computer crime incidents are reported. A diagram illustrates the vulnerability of modern computer systems. A table shows types and perpetrators of crimes, and a graph illustrates the growing incidence of such crimes. Includes graphs, diagrams, and tables.

172. "Piracy Suits on the Upswing." Computerworld, Vol. 19, No. 8, February 25, 1985, p. 18.

Illegal copying and selling of mainframe computer software is increasing. The only people who can usually copy mainframe software are high-ranking MIS personnel. It can be very difficult for corporations to prevent software piracy due to the level of responsibility enjoyed by these

individuals. An audit trail can be used to collect incriminating evidence of illegal copying and thus will act as a deterrent.

173. "Propose NBS R&D Program to Help Guard Gov't CPU's." _Electronic News_, Vol. 31, No. 1557, July 8, 1985, p. 8.

Representatives Jack Brooks and Dan Glickman have proposed legislation calling for the National Bureau of Standards to study the security of government computer installations. All federal agencies would be required to train their employees in computer security. A Government Operations Committee report says that federal computer systems lack internal security controls and audit checks.

174. Reed, W.G. _Telecommunications Security and Privacy_, October 17, 1983. 25 pages; 1 attachment. Washington: U.S. General Accounting Office. (Accession number 122613)

Testimony was presented to the Subcommittee on Transportation, Aviation, and Materials, House Committee on Science & Technology discussing information security. The discussion is divided into four areas: (1) information security, affect on automated systems and their telecommunication networks today, (2) legislation, policy, management and auditing in relation to information security, (3) problems contributing to information security due to audit findings of the last 7 years in relation to the factors of legislation policy, management, etc. and (4) federal findings that could impact the previously stated problems. Ample testimony is given on the seriousness of computer security vulnerabilities. A five page attachment is included that lists GAO reports covering major information security and federal computer matching efforts. (RH)

175. Rifkin, G. "Protecting Your Data." _Computerworld_, Vol. 17, No. 32A, August 17, 1983, p. 59-61, 63-64.

The increase in the use of microcomputer systems in offices is creating a greater need for security. Many companies do not view security as a high-priority issue. Major security risks focus upon areas such as unauthorized access to data bases, data integrity, hackers, disaster recovery, vandalism, movement of data off-site and physical safety of hardware and software. Several factors that must be considered are education of end users, controls regarding the purchase of hardware and software, audit of data to insure integrity of government regulations, and computer crime bills. (RH)

176. Robertson, J. "Westinghouse to Contest Court Subpoena for Audits." Electronic News, Vol. 31, No. 1533, January 21, 1985, p. 4,14.

Westinghouse Electric Corp. has refused to supply the Defense Department with subpoenaed internal audits. The Defense Department has turned the case over to the Justice Department. The Pentagon is seeking these records in order to verify that it was not overcharged on several contracts with Westinghouse. The government has previously been denied access to confidential corporate records.

177. Rushinek, A. and Rushinek, S. Security: Vital Controls in an Accounting Information System. March 1983, p. 65-67.

Computer crime is discussed in detail from two perspectives, access controls and communication controls. The need for a stricter level of controls is presented as being essential in computer technology, especially in the areas of accounting information systems (AIS) and electronic data processing (EDP). Given are the primary objectives of controls in information transactions and in the detection of exposure reduction. Three categories of exposure reduction are given and discussed: (1)preventive, (2)detective and (3)corrective measures. (RH)

178. Sobol, M. "DP Alliance Bolsters Security." Computerworld, Vol. 19, No. 50, December 16, 1985, p. 59-60.

While the data processing security officer and the data processing auditor of an organization approach their tasks differently, they seek a similar goal: protecting the assets of the organization from intrusion. The security officer reaches for potential weaknesses in computer security and the auditor reaches for actual weaknesses in computer security. The security officer provides recommendations to reduce the weaknesses and the auditor provides recommendations for decreasing the weaknesses.

179. Walden, J. "Cracking Down on Micro Crime." Business Computer Systems, October 1984, p. 40,42-44.

Microcomputers, especially hooked up to modems, offer a security risk. Unauthorized users may access protected data or may accidentally destroy data on a disk. Four danger areas are cited: theft of the actual computer or a part; theft or misuse of data; software piracy; and malicious damage. Firms are also open to problems via their communication systems, if protection isn't adequate.

Passwords, data encryption and audit trails are three methods suggested for protection. Various anecdotes are included that point out security risks.

180. Ward, G. "Micros Pose Mainframe-Size Security Control Problems." Data Management, Vol. 21, No. 7, July 1983, p. 38-39,42.

Several factors may jeopardize control of accounting applications: (1) less segregation of duties, (2) reduced processing controls, and (3) unrestricted access to data stored in mainframe systems. These have become significant security risks as a result of the growing number of micros. Controls in a microcomputer environment include the following: an audit trail, proper labeling of files, backups of all files and programs, full documentation of the system, and cross-training of employees. Minimization of risks can be achieved by: (1) designation of certain personnel authorizing microcomputer access to the central data base, (2) passwords, (3) read-only access, and (4) a log of who accesses and extracts information from the central system, and what information is taken.

181. Wilder, K. "The DP Professional as Privacy Inspector." Information Age, Vol. 5, July 1983, p. 143-144.

The Data Protection Bill proposed in England requires that systems dealing with automatic processing of personal data register with the government and undergo a privacy audit. Financial auditors have been suggested to carry out the inspections. An alternative idea has been suggested that computer professionals are more qualified to conduct such inspections.

182. Young, P. "Plan to Help Auditors Find Computer Fraud." Computerworld Australia, Vol. 6, No. 39, March 30, 1984, p. 4.

Control Data Australia Pty. Ltd. and the Institute of Internal Auditors have formed a joint venture to produce courseware that would help detect computer fraud. The two groups will use a CDC 110 microcomputer along with the Plato authorizing system. This combination will allow a computer simulation of fraud to be produced and give auditors experience in detecting what the variables are in the simulation as compared to the real world situations.

183. Zielenziger, D. "Tandem Computers Settles with SEC, Will Allow 3-Year Inspection of Books." Electronic Engineering Times, No. 300, October 8, 1984, p. 10.

Tandem Computers has agreed to allow the Securities & Exchange Commission to inspect its books for the next three years. The agreement follows SEC charges that Tandem claimed revenues in 1982 which should have been credited to fiscal 1983. Following an Arthur Anderson audit, Tandem lowered its stated 1982 revenues from $37.2 million to $29.9 million.

SOFTWARE

184. "Accounting Software." Computer Retailing, Vol. 8, No. 5, May 1984, p. 107.

A client accounting package, the Glows Audit and Write-up system, has been introduced by Orion Microsystem. It is a multi-user system, allowing for up to sixty-four interactive terminals. It includes General Ledger, Fixed Asset Reporting and an Audit package. The package runs under Unix and Xenix.

185. Anderson, W.L. A List of Selected GAO Publications Containing Checklists or Guidance on Computer Software Topics. Washington: U.S. General Accounting Office. September 20, 1984. (Accession number 125250) (3p.)

This is a listing of GAO publications prior to 1982 covering a listing of ADP software related subjects, of which, auditing is included. It was prepared for the Panel "Breaking the Software Bottleneck" at the Federal Computer Conference, Washington, D.C. September 20 1984. (RH)

186. Beitman, L. "An Audit Software Program Base." EDPACS, Vol. 11, No. 9, March 1984, p. 6-8.

Many audit software packages are available on the market. Often auditors are not aware of packages which could help them in auditing. A directory of audit programs is presented.

187. "Bridge Communications Adds Server to Give Session-Level Ethernet Records." Computerworld, Vol. 19, No. 6, Feb. 11, 1985, p. 81.

Bridge Communications' NCS 150 network control server provides complete records of session-level activities for Ethernet local-area networks. It provides audit trails on-

line or in hard copy. In the event of system overload, contention backup, or if printer thresholds are exceeded, the NCS 150 will sound an alarm.

188. Briggs, G. "Carleton Auditec Pkg. to Fit Honeywell CPU." MIS Week, Vol. 6, No. 28, July 17, 1985, p. 82.

Carleton Corp. has adapted its Auditec reporting and auditing software package to run on Honeywell's DPS8, DPS 88, and DPS 90 mainframes. The machines run the proprietary GCOS operating system. Auditec allows users to use English commands in its COBOL-74 programs. The package consists of an administrative program, a dictionary maintenance program, and a program generator. It was designed to run on IBM machines.

189. Byramji, H.M. "Portfolio Management Package Puts World in User's Pocket." Wall Street Computer Review, Vol. 2, No. 4, February 1985, p. 56,58.

The Reveal Portfolio and Client Management System is designed for brokers and is used primarily as a client management system. The package is ideal for maintaining an audit trail for SEC requirements. The package is easy to use and contains all necessary client data. The package offers a variety of reporting features as well as a calendar. It will even handle the difficult problem of stock splits. The documentation is good. The package runs on an IBM PC.

190. "CA-Asset Management Tracks Capital Equip." Information Systems News, No. 107, February 6, 1984, p. 31.

The Financial Management Software Series from Computer Associates International, Inc. is complete with the release of CA-Asset Management. The on-line, interactive accounting package supports tracking capital equipment and depreciation projection, and it provides a complete audit trail.

191. "Federal Agency Mining Benefits from Auditing System." Computerworld, Vol. 19, No. 23, June 10, 1985, p. 30-31.

American Management Systems' Auditing and Financial System (AFS) is helping the Mineral Management Service (MMS) of the U.S. Department of the Interior better manage its royalty accounting and collection system. The package allows MMS to deposit between $12 million and $15 million in additional interest into the U.S. Treasury each year.

192. "General Administration and Planning Support: Buyer's Guide." ICP Interface: Data Processing Management, Vol. 8, No. 1, January-February 1983, p. 121.

Software products from the ICP Software Information Database are described. Products include audit programs and modeling systems for financial analysis. Product descriptions by vendor, prices, operating environments and ordering information are provided for each product. Alpha index in chart form is included.

193. Hester, C. "DSI Offers 'Post' for Software Security." MIS Week, Vol. 5, No. 38, September 19, 1984, p. 63.

Data Securities International (DSI) has initiated a new software protection service called Post. Under the service, DSI, as an independent third party, holds a developer's source code design specifications, and any software modifications in an account. It provides physical protection for the software and maintains an audit trail.

194. "Index to Utility Software." Computerworld, Vol. 18, No. 26A, June 27, 1984, p. 2C-44.

This index to utility software, including data/file management, graphics, query languages, security/auditing, and sort/merge packages, is grouped under the following operating system types: AOS/VS, CMS, DOS, DOS/US, DOS/USE, EDX, MCP, MPE, MUS, OS/US, PRIMOS, RSTS/E, RSX-11M, RT-11, RTE, SSP, UNIX, VM/CMS, VRX, and Other Operating Systems. Within each category, the following information is included: vendor, package, package type, and the page number on which the product listing can be found. Product listings follow the index and are listed alphabetically by vendor under each product type. Each listing provides the following information:specific application, system requirements, operating system, memory required, source language, source code availability, purchase terms, price, number installed, and date first installed.

195. "Insurer Banishes Tape Headaches with SMF Package." Computerworld, Vol. 18, No. 45, November 5, 1984, p. 40.

Since installing Value Computing's SMF Express software package, the systems management facility (SMF) inventory at Reliance Insurance Co. runs to 125 volumes of tape for fifteen months. Previously, the firm accumulated 250 SMF tapes per month. In addition, the SMF package has eliminated

losses due to human error. It is used for job accounting, charge-back, capacity planning, security system monitoring, resource auditing, and performance measurement.

196. Johnson, T.W. "Auditing DOS/VSE System Software Maintenance." EDPACS, Vol. 10, January 1983, p. 1-20.

The technical procedures for auditing and controlling the updating of IBM DOS/VSE systems are covered. The functions of the Interactive Programming Facility (IPF), the Maintenance System History Program (MSHP), and some of the commands that are invoked, such as BACKUP and RESTORE, are described. Brief steps are given to update the system, either through a change in a program product (software package) or an application program. The approval of a change and a suggested form are covered. Steps used by the technical services staff to apply maintenance are described, together with the seven IBM library sets. Testing procedures and updating controls are discussed. A list of suggested minimum audit documentation is included.

197. Keeling, D. "Easy Versus Pulsar." PC User, March 1984, p. 84-93.

Easy and Pulsar are both British software accounting systems with full audit trails that allow the records required by customs and excise value added tax (VAT) purposes. The modules for these systems are independent or integrated; both have modules for nominal sales and purchase ledgers, stock control and invoicing. Pulsar, with additional modules is more comprehensive, useful for a larger company with an accounts department. Easy has an easy-to-use manual and is ideal for a small business and first-time user. The two programs are reviewed with capabilities listed and screens displayed. Operating systems are PC DOS 1.10; PC DOS 2.00.

198. Leddy, M.K. "Accounting Firms Develop Software for Clients." PC Week, Vol. 2, No. 11, March 19, 1985, p. 72.

Top accounting firms are developing their own financial software in order to help them deliver services to clients. Peat, Marwick, Mitchell & Co. offers tax packages, custom systems development and the Government Information Management System. Arthur Young & Co. offers government accounting programs, tax software and general accounting software which are sold along with their consulting services. Coopers & Lybrand offers auditing software. Deloitte, Haskins and Sells are marketing financial software for specialized areas.

199. Levy, S. "Taking on the IRS." Popular Computing, Vol. 4, No. 9, July 1985, p. 44,46-48.

In preparation for an IRS audit, a Macintosh user organized his mass of receipts, checks, and notations into a database program. This was accomplished in a few days with the help of Overvue, an information manager for the Macintosh computer. The IRS auditor was very impressed with the database and was able to get a clear picture of the scope and nature of the claims. As a result all deductions were allowed, including an additional $500 found during the input sessions. The negative side of all this organization is the possibility of privacy invasion.

200. Mann, S. "Electronic Ledgers for the Macintosh: Selecting a Mac Accounting Package." Macworld, Vol. 2, No. 13, December 1985, p. 80.

An evaluation and review is given of three Macintosh-compatible accounting software programs: Back to Basics from Peachtree Software, Symposium from Symposium, Inc., and Rags to Riches from Chang Labs. Specific details of the systems are compared summarizing the similarities as well as the drawbacks of each.

201. Mayo, K. "Property Values: Software Testing Services Helps IRS Determine the Real Value of Tax Shelters." Business Computer Systems, Vol. 4, No. 8, August 1985, p. 23,25.

An audit of software used as a tax shelter is performed by XXCAL for the IRS. The company sees to software products that are overvalued by the publishers, determines the proper valuation, uncovers shortcomings in design or documentation, and offers suggestions on a product's marketing. The findings are reported to the IRS which decides what action to take. The review process takes about forty to eighty hours, and about one-hundred products are reviewed a month at XXCAL.

202. Micossi, A. "Stalking the Spreadsheet." Computer Decisions, Vol. 17, No. 2, January 29, 1985, p. 16,18.

Errors in creating spreadsheet models can cause serious problems that are difficult to detect. Two new spreadsheet auditing packages can help spot errors. The Spreadsheet Auditor from Consumer Software sells for $99 and runs with Lotus 1-2-3, Visicalc, and Supercalc. Docucalc is from Micro Decision Systems and runs with Lotus 1-2-3, Symphony,

Visicalc, and Supercalc. Docucalc comes in French and English. The Spreadsheet Auditor reportedly is easier to use.

203. "Micro System Authenticates Wire Messages." Computers in Banking, Vol. 2, No. 8, November 1985, p. 95.

CableKey, a stand-alone automated funds transfer cable test and verification product for banks which are not associated with a funds transfer network, provided seven status reports and a detailed audit trail as part of verification. CableKey operates on IBM PCs with hard disk and printer. The program is distributed by Bankers Trust Information Services, New York, NY.

204. Monk, T. and Landis, K. "Spreadsheet Auditor Helps Users Design, Debug Programs." Computers in Banking, Vol. 2, No. 6, September 1985, p. 88.

The Spreadsheet Auditor helps the user design, program, test, and debug a spreadsheet. This package, designed by Consumers' Software of Vancouver, BC, consists of four utility programs: auditor, cross-reference, macroanalysis and sideprint. The Spreadsheet Auditor is described as a productive tool to be used in conjunction with LOTUS 1-2-3, Symphony or Supercalc.

205. "MRP II Software Audits - Manufacturing Software Systems." P & IM Review (Production & Inventory Management Review), Vol. 4, No. 3, March 1984, p. 63.

A new software package, MRP II Software Audits has been introduced by Manufacturing Software Systems, Inc. This new Audits system is designed to help evaluate MRP software for implementation. Audits will compare a company's requirements with the functions a software package can do.

206. Myers, E. "Security Software Secrets." Datamation, Vol. 30, No. 16, October 15, 1984, p. 84.

POST from Data Securities Int'l (DSI) allows the establishment of protection through the states of program design, development, marketing and sales. An audit trail of transactions is also generated. POST ensures product delivery with documentation of the software development cycle and assures end users controlled access to source code.

207. Needle, S. "Guide to Accounting Software." InfoWorld, Vol. 6, May 7, 1984, p. 29-30.

   Choosing an accounting system for a microcomputer requires knowledge of accounting, business operations and computers. Certified public accountants do not generally have enough understanding of computers to give advice on software. There is little correlation between the quality of packaging, cost of a package, number of features and the suitability of a package for a particular business. Criteria to consider are documentation, audit trails, expandability and size limitations. The best way to choose accounting software is with the aid of an independent professional consultant.

208. Post, D. "General Ledger's Bottom Line." Business Computer Systems, Vol. 3, No. 7, July 1984, p. 68-70,74+.

   Microcomputers have enabled many companies to have in-house computerized accounting systems. General ledger is considered a good starting place. It offers companies both day-to-day control over their bookkeeping and evaluative techniques for financial reports. Characteristics of general ledger packages are reviewed, including what to look for in a package. These include financial reports, thorough audit trails, ease of use, ease of upgrading and degree of modularity, so programs can work together. An insert discusses accounting software used by CPAs. Photographs and profiles are included for two users. A chart lists forty vendors and ranks their products on twenty-seven characteristics.

209. "Report Writer 'Travels' With User's Auditors." Computerworld, Vol. 17, No. 46, November 14, 1983, p. 36.

   Cooper Industries is a Fortune 500 manufacturing company with fifteen independent divisions, each using its own data processing system. The company's internal auditors needed a report writer software package which could run on any IBM mainframe operating system and interface with both Cullinet Software, Inc.'s IDMS and Cincom Systems, Inc.'s Total data base management system, so that the software could be used throughout the company's various divisions. Carleton Corp.'s report writer Auditec met these criteria, so it was selected by the company. Cooper has expressed great satisfaction with the product, because it is easy for all auditors, not just DP auditors, to use and offers the portability needed for performing quick field audits at any company installation.

210. "Shaw's System Allows Users More Control." Computers in Banking, Vol. 2, No. 8, November 1985, p. 74.

Audit is a generalized report writing system that allows customization of forms and use of preprinted forms, and it produces required reports and calculates interest. Audit may be purchased from Shaw Systems Associates, Inc., and works on the IBM 370, 43xx, 303x, and 308x.

211. Snyders, J. "Auditors and Data Processing." Computer Decisions, Vol. 16, No. 5, April 1984, p. 48,50+.

Computer auditors are responsible for the accuracy and efficiency of a company's data processing systems and software. A variety of companies, including large conglomerates, banks, manufacturers, and insurance companies, have acquired auditing software that has greatly improved efficiency and decreased dependency on programmers. Auditing packages save time in setting up and reviewing application software and most packages require little programming experience. A chart lists fourteen auditing packages with their vendor, requirements, and price.

212. Snyders, J. "Taking the Angst Out of Auditing." Computer Decisions, Vol. 15, No. 4, April 1983, p. 46-50,54+.

An auditing package can help to eliminate stress in a DP manager's life. These packages can assist auditors in locating potential problems. The same system that gives the auditor independence from the programming staff can also be used by the MIS manager to prove expenditures. As more information becomes automated, auditing packages become more of a requirement.

213. "Software Gives Honeywell Computer Communications Variety." Data Communications, Vol. 12, No. 8, August 1983, p. 219.

Advanced Computer Techniques Corporation (ACT) has a network processor (NP) software package that permits a Honeywell DPS/ Level 6 processor to handle communications functions. Some features of NP are: message routing, multiple host, audit trail, remote console operation, and local disk storage for communications functions. Future versions of NP will feature gateways, local area network, electronic mail, word processor communication between similar and dissimilar equipment, and protocol format.

214. "Symplex Announces New Release for Easymenu." NCR Monthly, Vol. 2, No. 6, June 1984, p. 7.

NCRMDB Symplex Systems has announced release 2.0 of its menu generator, security system called EASYMENU. It is designed for NCR's IMOS, IRX and ITX users. New features on this release of the security and audit system include: the sign on password, access codes that establish what a user can run at a particular terminal, a ten-character audit code that can be defined for a password and the menu system manager that can now define four eighty character lines on the enter password screen.

215. "System Aids Deposit/Loan Verifications." Computers in Banking, Vol. 2, No. 8, November 1985, p. 76.

Audit System's new, enhanced version will produce documents interesting to bank managers as well as auditors, including deposit and loan payment schedules. Audit System is flexible, allowing customized reports and easy data retrieval.

216. "System Tailored Specifically for Banks." Computers in Banking, Vol. 2, No. 8, November 1985, p. 74-75.

The Bank Audit System recalculates savings account and loan interest and balance for reliability checking against a bank's records. The fifteen program system is used by both internal and external auditors and requires some EDP training. The mainframe based COBOL system runs on all DOS or OS IBM and Burroughs machines.

217. "Systems Design Software." Datamation, Vol. 30, No. 16, October 1, 1984, p. 152.

Design/1, from Arthur Anderson, supports design teams that work on development projects for the IBM PC and PC/XT. Predefined structure charts, automatic cross referencing and audit capabilities are some of the features.

218. "Utility Helps Service Firm Perform Quality Assurance." Computerworld, Vol. 18, No. 12, March 19, 1984, p. 35.

Randall Smith, production control manager at the Denver-based Affiliated Bank Services Co. (ABSC), was shopping for a utility that would help the internal auditors compare two versions of one program and allow programmers to perform

data comparisons. The utility had to be capable of running on the company's IBM 3083 mainframe under MVS. Smith found what he wanted in Sterling Software Marketing's Comparex package. It has a test mode that synchronizes by lines and a data mode that synchronizes by fields. The package can handle all file organizations, including VSAM, ISAM, and partition data sets (PDS). The programmers of ABSC are pleased with the utility.

219. "Utility Software - Security/Auditing." Computerworld, Vol. 17, No. 50A, December 14, 1983, p. 105F-107,135.

This directory of security/auditing software is listed alphabetically by vendor. It is divided into two categories: large systems software and microcomputer software. Each product description includes the package name, the specific application and/or industry for which the package is designed, the hardware and/or operating system on which the package runs, the amount of memory required, the source language, the availability of source code, the purchase terms, the price, the date first installed, and the number installed. Following the product listings is a product locator index, also divided into large system and micro applications. The index provides the name of the package, its price, and the page number on which the complete product description can be found.

220. Williams, P. "Getting Priorities Right." IBM User, May 1983, p. 33-34,35.

There are many factors to consider when selecting a software package for a particular application or function. One very important selection which is often overlooked is the question of control and audibility. Control refers to the screening of data, such as business transactions, and the correction or rejection of this data, while audibility refers to the need for an audit function to be performed on results produced by a computer, mainly when a company's financial statements are involved. By giving these two areas high priority when selecting a software package, purchasers

can eliminate many potential problems, though until software
certification standards are established, buyers must
consider carefully their specific data processing needs.

221. Wolf, A.L. "Audit Tools Promote Tight Security
Independent of DP Staff." Computerworld Special Report,
Supplement to Computerworld, Vol. 19, No. 47, November 1985,
p. 74,79.

Audit software programs provide greater security than
alternative tools for auditing. The software falls into two
primary categories: auditing data and comparing source
notes. The programs grant auditors the freedom to work
independently of the data processing staff. Audit programs
sample and calculate data, perform financial analysis and
trend line analysis, and provide frequency distributions and
histograms.

222. Yarberry, W.A. "Audit Software: Eliminating the
'Middleman'." EDPACS, Vol. 12, No. 3, September 1984, p. 1-4.

In order to obtain higher quality in their audits, the First
Tennessee Bank in Memphis decided to train their financial
auditors to write their own software. The ability of
auditors to write their own software resulted in increased
creativity, and more time for EDP staff to concentrate on
tasks beyond that of the routine audit tasks.