CHAPTER 4

CAATTs for Broader-Scoped Audits

In Chapter 3, case studies of the possible use of CAATTs in support of various types of audits were presented. The examples went beyond the typical financial audit examples to encourage all auditors to think about new uses for technology. This chapter takes the auditor into the nontraditional use of CAATTs by presenting additional case studies. The hope is to push the envelope even further and show the reader some new ways CAATTs can be used in audits with a wider scope.

In the first section, Case Study 28 shows how CAATTs can be used to support all phases of the audit process, from planning to reporting. While for some organizations this information may not be new, others may still be limiting their use of CAATTs to the conduct phase. This example encourages auditors to rethink their old audit methods and approaches.

The second section discusses the issue of value-for-money auditing. The use of CAATTs under these circumstances is presented in Case Study 29. This example shows how a standard inventory audit can be transformed into a value-for-money inventory audit. It includes an illustration of how audit software can be used to identify obsolete inventory items, saving the company storage costs and generating additional revenues.

The third section presents audit involvement in assessing corporate reengineering activities, such as downsizing. The case studies 30 to 32 show how audit can use CAATTs to contribute to the success of these corporate initiatives.

Finally, the topic of benchmarking is discussed, with a comparison of benchmarking and audit. Case Study 33 highlights the differences between audit and benchmarking.

Integrated Use of CAATTs

As CAATT software is developed and introduced to auditors, more integration of the software into the audit process is required. This integration

involves the use of CAATTs throughout the audit process, from planning to reporting and even to the administration of the audit function.

In isolation, the use of CAATTs can be effective in reducing the manual tasks associated with specific aspects of the audit. However, a more integrated approach to the use of CAATTs will help maximize their potential benefits. Previous examples in Chapter 3 described ways in which automated tools and techniques supported internal audit projects, making them more efficient and effective through the use of microcomputer-based CAATTs. For the most part, however, the use of CAATTs in Chapter 3 focused on the data analysis requirements of the audits.

Case Study 28 shows how a number of different types of audit software were employed to support an audit. The techniques used on this audit included text search, simple cut-and-paste operations, statistical and directed sampling, and the use of telecommunications and other software. The intent is to show how audit teams can pull it all together and make even better use of all the general-purpose and audit-specific software at their disposal, not just data analysis software. This example illustrates how a variety of CAATTs can be used throughout the audit process, improving the efficiency and effectiveness of the audit. The aim is to encourage auditors to adopt an integrated approach to the use of technology in support of the entire audit process.

Case Study 28: Management of Commissions and Bonuses

The audit department was asked by senior management to review the compensation system for sales staff—in particular, the payment of commissions and bonuses.

During the planning phase, the audit team used text search software to review prior audit reports and programs to determine if issues related to the management of commissions and bonuses had been dealt with in any previous audit assignments. The team also used the Internet to search for and retrieve copies of relevant audit programs used by auditors from other companies. Several sites containing free audit programs were visited in addition to a general Google search. The team electronically cut-and-pasted selected portions of these audit programs into the audit program they were developing for the audit.

Next, they electronically reviewed corporate personnel policies on the corporate intranet to develop an understanding of the rules and regulations pertaining to the approval of, and compensation rates for, various bonuses and commissions. Relevant sections of these policies

were cut-and-pasted into the background working papers of the audit, including the sections on commission schedules and preconditions for bonuses. The audit team also used flowcharting software to record the approval process and the controls over payments.

Still, during the planning phase, the audit team extracted data from the compensation system in order to determine the commission and bonus payment patterns of the corporation. Reviewing the total of these payments for the past five years, by region, allowed the auditors to identify trends by bonus type and month, and to determine which regions had the largest total payments of commissions and bonuses.

The team also used detailed transactions from the compensation system to select a statistical sample of transactions related to commissions and bonuses for the on-site review. A dollar unit sampling methodology was employed to select a sample of payments, which were downloaded to a microcomputer.

Finally, several analyses were performed on the detailed transactions to identify a judgmental (directed) sample for further review. In particular, using criteria established by the audit team and senior management, one analysis identified all employees, by geographic area, who had received commissions or bonuses amounting to 20 percent or more of their regular salary figures.

Sales Staff with Commissions and Bonuses ≥ 20% of Salary

Name	Area	Bonus	Salary	Percentage
Jones	North	7,115.50	35,000.00	20.00
Black	East	7,341.00	35,000.00	21.00
Smith	West	10,445.25	35,000.00	30.00
Williams	East	12,572.34	41,000.00	31.00
Cantel	North	13,927.01	35,000.00	44.00
Coderre	West	15,279.01	35,000.00	44.00
Bobins	South	13,854.27	25,000.00	55.00
Total		80,534.37		

Next, the auditors performed an analysis to identify all branches with significant increases over last year's budgets for commissions and bonuses. Totals by branch, by sales area, and other criteria were produced and reviewed. The results of these analyses were used to select more transactions for the directed sample.

For all employees selected in either the statistical or judgmental sample, basic tombstone data was extracted from the personnel system, including job title, job classification, work location, supervisor, and basic

rate of pay. The compensation system was also used to determine the total commissions and bonuses paid to each employee in the two samples, by year, and for the past three years. The sales system was used to identify the annual sales volume for these employees for the past three years.

As a result of using CAATTs to extract and analyze data from various systems, the audit team had a complete picture of each employee in the two samples before the audit team had even left the office. The use of technology during the planning phase also helped them to develop an audit program quickly, review pertinent corporate policies, and select statistical and judgmental samples for further review.

The corporation had several plants and branch offices located across the country. Since the conduct phase of the audit called for on-site file reviews, the audit team was split into four teams: three would travel to the remote offices and one would conduct a review of headquarters' payments and coordinate the aggregation of the results.

To help ensure consistency across audit teams and to guide the auditors through the complex audit program and criteria related to the payment of commissions and bonuses, an electronic audit program was developed using Visual Basic. Tombstone information for each employee selected in the statistical and judgmental samples, such as yearly salary, total commission, total bonuses, position title, supervisor, and branch, was read into the electronic audit program. A single computer screen presented the information to the auditors for easy review. The audit program also led the auditors through a series of questions and branched to different sections of the audit program according to the auditor-supplied answers. For example, the audit program branched to different sections based on the answer to the question "Is the employee directly involved in direct sales activities?" Additional information was provided to the auditors in help files, and pull-down menus were employed to simplify the task of completing the responses for each of the required fields. The electronic audit program was also used to capture information obtained and conclusions drawn during the on-site manual review of the files. Information captured included evidence of management review, reason for and the type of commission or bonus, and the auditor's opinion as to the appropriateness of the payment. Finally, the electronic audit program saved all the information in a data file, which could be analyzed using data analysis software.

The three on-the-road audit teams were equipped with laptops with Internet connections. Each night, the data files for the transactions reviewed that day and the associated working paper notes were sent via FTP to the audit office, where they were analyzed by the project leader. The project leader reviewed each of the files for completeness, combined the data files into a summary file, and performed various analyses

on the file, such as summary by branch, across branches, by sales area, and by product. The summary file also allowed a comparison of the results obtained by each team and an analysis of the overall results, such as total dollars of commission or bonuses deemed inappropriate versus the total payments reviewed. The project leader also used e-mail to send additional instructions out to the audit teams. In one case, the project leader used FTP to send the teams a modification to the electronic audit program to handle a special set of circumstances at one of the branch offices.

During the reporting phase, presentation software was employed to develop slides to graphically illustrate the main audit findings and recommendations for the exit interviews. The final report was prepared using word processing software, and the findings were stored in a database of findings, which could be accessed by all audit teams in the organization. The details of the audit program were also placed in a centralized directory for use by other audit teams.

In Case Study 28, CAATTs were employed throughout the audit process from the beginning of the planning phase (Internet, electronic search, cut-and-paste, flowcharting, and trend analysis) to the conduct phase (statistical analyses, judgmental samples, matching of files, e-mail, file transfers, programming, and data analyses) through to the reporting phase (presentations, graphics, word processing, databases). Neither expensive/sophisticated tools and techniques, nor full-blown automated working papers were employed, yet the audit was still able to achieve significant benefits through the integrated use of CAATTs. In addition, consistency was maintained across the audit teams and data analyzed quickly and effectively.

Automating bits and pieces of the audit process can achieve significant benefits. Sorting, searching, and sampling are examples of data analysis functions that often use CAATTs. However, other automated tools and techniques can assist auditors in performing many different tasks. Communication, background research, working paper preparation, and many other audit tasks can also use technology. Collectively, the integrated use of a wide range of CAATTs can maximize the efficiency and effectiveness of the entire audit process such that the whole is greater than the sum of its parts.

Audit management and auditors should be examining all of the tasks they are required to perform as part of an audit. Many of these tasks can benefit from the application of technology at a minimal cost. Audit management should also be examining the administrative tasks they perform to manage and administer the audit function to determine how best to apply CAATTs in these areas.

Value-for-Money Auditing

In many organizations, tick-and-bop and compliance auditing are being supplemented or replaced by comprehensive audits and value-for-money audits. Today's auditors must not only strive to assess the internal control frameworks and protect corporate assets, but must do so with a view to adding value to the organization's bottom line. The notion of adding value is not new to internal audit but is still not universally accepted. Adding value can have many facets and will likely have a direct influence on the objectives of every audit. More than ever, audit needs to develop objectives and related lines of inquiry to assess and make recommendations upon value-for-money (VFM) issues. This requires audit to adopt a new method of auditing and often a new set of tools and techniques.

For example, in order to examine VFM issues, an inventory audit's objectives must be expanded to include steps to determine whether or not the inventory manager is taking into account VFM considerations when procuring and storing inventory. The audit objectives should include steps to identify ways for the company to reduce inventory costs, while maintaining quality service to its clients. As part of a VFM review, the auditor should examine best practices in the implementation of the most efficient means of inventory management to improve cost savings for the organization and ways to enhance levels of service for the customer.

The value-added inventory auditing example encourages auditors to use the power and flexibility of CAATTs to expand the traditional scope and objectives of their audits. It uses an inventory audit with a value-for-money audit perspective as an example of the approach and benefits of this type of thinking. Case Study 29 shows how the objectives of a standard inventory audit can be expanded, from a simple verification of the inventory levels through a physical count of the inventory on hand, to include an examination of the efficiency and economy of the inventory management system.

Value-Added Auditing of Inventory Systems

Companies wishing to remain competitive in today's marketplace must be able to hold fewer inventories, fill orders more quickly, turn stock over more frequently, and obtain replenishment supplies significantly faster than their competitors. To address VFM concerns, audits of inventory management are attempting to identify items in inventory where supply does not match demand, items are obsolete or unusable, or items are procured uneconomically. These questions cannot be addressed simply by performing physical inventory counts. True VFM inventory audits will require the auditor to identify possible cost savings in several areas.

Data Analysis in Support of Value-Added Inventory Auditing

SUPPLY NOT MATCHED TO DEMAND   To identify items where there is more supply than demand:

1. Use inventory database to identify items with:
   - Current stock levels greater than the maximum stock levels
   - Stock levels on hand that would satisfy several years worth of use
   - Low turnover rates
2. Examine the use of automatic reorder flags and the reorder levels—these may be based on historical values which are now inaccurate.
3. Compare reorder levels with turnover rates for items with automatic reorder flags and items with low turnover rates. Should the reorder quantity be set at 100 if it took five years to use 25 items?
4. Discuss with supply managers the likelihood of these items being used and/or the plans to dispose of them.
5. Compare supply/demand levels at the warehouse with levels at other locations.
6. Visit supply depots to inspect items that have been in storage for an extensive period of time with little or no demand.

To identify items that are in short supply at one location, while in a surplus situation at other locations:

1. Compare turnover rates by item by location.
2. Examine short-order or quick-response requests and, for these items, determine inventory levels at other locations.
3. Check for automatic reorder flags and reorder levels and minimum and maximum stock level quantities.

OBSOLETE INVENTORY   To identify items that are no longer in use:

1. Identify equipment that has been declared obsolete and, for each piece of equipment, identify the items (parts) that support the obsolete equipment.
2. Extract current inventory levels, total value for inventory, and storage requirements for items/parts supporting obsolete equipment.
3. Determine if items have possible uses elsewhere. In many inventory system files, there is a field that provides details on the equipment that uses the given part. For example, a type of spark plug may fit into several different engines, only one of which was declared obsolete. Therefore, before the inventory of spark plugs can be declared obsolete, all engines that could use that spark plug must be obsolete.

4. Check for automatic reorder flags and reorder levels and minimum and maximum stock level quantities. For example, a part that used to fit into four pieces of equipment, three of which have been declared obsolete, should have the reorder and minimum stock levels adjusted.

INVENTORY NOT USABLE   To identify items that are no longer usable:

1. Check for shelf-life flags and extract items that have been stored for periods longer than stated shelf life.
2. Sample inventory items that have been stored for long periods of time and may no longer be usable. The time frame will vary depending on the type of item and must be determined by the audit team.
3. Examine items declared as write-offs or not repairable for causes.
4. Ensure that the automatic reorder flag is turned off and that minimum stock level quantity is set to zero for obsolete equipment. For example, too often the excess obsolete stock is discarded, and the automatic reorder routine kicks in and orders more stock.

UNECONOMIC PURCHASES   To identify items with poor gross margin:

1. Compare purchase price and storage costs with selling price. Audit can also factor in space requirements, special storage conditions, etc., when calculating the cost of maintaining these items in inventory.

To identify items not procured economically (best price, economic order quantity):

1. Compare statistical sample of items purchased to determine if other suppliers have better prices.
2. Review contracts for price breaks and economic order quantities for comparison with actual quantities ordered.

Each of these issues can be addressed with modern audit software, because all conditions are not only identifiable with reference to electronic data, but can also be used to filter and screen the data files, with ad hoc or standard steps in batches, prior to physical inventory counts.

Inventory Management Practices and Approaches

Inventory management practices will vary from industry to industry, but audit can play a role in helping to identify the areas for improvement. Several approaches to inventory management can be employed.

Supplier parks shift responsibilities for storing and managing inventory to suppliers. This concept involves a much closer association between the organization and its suppliers. Close partnering between a company and its prime suppliers can reduce inventory levels to a minimum, while remaining responsive to demand.

The just-in-time inventory concept strives to order items closer to the demand time. This keeps inventories low, causes stock to turn several times a year, while filling orders within weeks and maintaining good customer service. Vendor-managed inventory (VMI) takes the just-in-time inventory concept one step further, advocating the use of timely information to lower inventory levels at all points on the supply chain. VMI looks across the supply chain and its inventory profile to remove inventory holdings throughout the chain. It is an integrated inventory management concept that begins with the consumer at the point of purchase. The point-of-sale data is automatically transmitted all the way through the supply chain to suppliers, retailers, and manufacturers. In essence, it is quite simply a smooth and continuous flow of items through the supply chain to the ultimate consumers, which is matched to consumption.

A number of companies maintain a huge inventory at centralized warehouses that, in turn, supply retail stores or smaller depots. A large retailer may employ an inventory management practice of buying and storing supplies at both wholesale and retail locations to ensure items are readily available to customers. However, these inventory management methods can mean that inventory is maintained at the warehouses years in advance of when the items are actually needed. Storing inventory at many different locations may result in inventory that turns over slowly, thereby producing large amounts of old, obsolete, and excess items. Audit can research best practices and work with their clients to establish and then monitor appropriate performance measures.

Inventory costs such as storage space ($/sq. ft.), personnel to manage the warehouse, computer systems, and computer time and even the opportunity cost of tying up capital are significant. According to one study, the standard cost of maintaining inventory ranges from 10 to 20 percent of the purchase value of the inventory. Other studies report even higher percentages (up to 30 percent of purchase cost). For purchase decisions, some inventory control points use a percentage of the item's value, which can be in the range of 18 to 22 percent of the purchase value. Thus, if a company has $1 million in excess or obsolete inventory, the annual storage cost alone would be in the range of $180,000 to $220,000.

Excess inventory slows down the response time to valid requests for items, making it difficult to fill legitimate orders within the set performance measures or even leading to the construction of new warehouse facilities to

store the obsolete items. And customers may move their business elsewhere if their requirements are not being met in a timely and dependable fashion.

Possible Areas for Audit-Suggested Improvements

Inventory audits have been a part of internal audit for many years. However, in today's cost-conscious environment, internal audit should be trying to add lines of inquiry and objectives to not only assess proper controls over the physical security of inventory, but also to find ways for the organization to improve its management of inventory. In this way, internal audit can contribute to the bottom line of the company and add value to client operations. Therefore, the audit scopes and objectives for standard, yearly audits should be reviewed to determine if they could be expanded to include lines of inquiry related to VFM and best practices. Contributing to the bottom line will ensure that audit adds value to, and is perceived as a vital part of, the organization—and not seen simply as an administrative overhead.

Audit recommendations must be based on realistic requirements and must be tailored to the specific client operations. The following section discusses areas where audit should consider looking for potential improvements in their inventory system.

Better computer and communication systems offer inventory managers better visibility of products as they flow from supplier to consumer. Audit should examine using automation to determine if:

- Inventory managers have 100 percent visibility of stock held in warehouses, being moved to and from warehouses, and at the retail level up to the point of sale.
- Inventory managers can determine an item's status at any time, including its demand history.
- Staff ranging from order-entry clerks to company executives can obtain an item's status, enabling them to forecast requirements, accurately plan the reorder of replenishment stock, and tightly manage and control inventory.

Improved methods of managing, ordering, and paying for items can also reduce lead times in the process and improve responsiveness to client needs. Audit can include lines of inquiry to determine if:

- Electronic data interchange could be used to speed up purchase orders, bill payment, and shipping documents, as well as the rate at which inventory flows through distribution centers; for example, existing

technology such as bar codes and scanners make the electronic transmission of point-of-sale information to inventory managers possible.
- Inventory managers are able to monitor goods passing through distribution centers, locate goods in warehouses, and eliminate the need to physically count inventory or manually keypunch inventory data.
- Point-of-sale information is shared with suppliers and carriers to enable them to better forecast their own requirements and meet the organization's needs.
- Inventory managers practice total asset visibility and electronic data interchange to virtually eliminate the situation in which additional stock is ordered at the wholesale level while excess inventory is held at the retail level.

Finally, audit can use the Internet to research new inventory management techniques and best practices to ensure management is aware of inventory practices such as just-in-time inventory, supplier parks, and vendor-managed inventory. Audit can assist in the implementation and monitoring of these techniques by documenting the current practices and flows, identifying costs and opportunities, and comparing the results under the new practices with those under the old practices. Companies using the most aggressive inventory management practices no longer store inventory in intermediate locations at all. Now, their suppliers deliver inventory only when needed. Organizations have reduced their hardware inventories by as much as 80 percent using aggressive inventory management techniques. Studies have estimated that the potential inventory savings in the U.S. retail sector alone can be as high as $50 billion annually with a 50 percent reduction in systemwide inventories. Audit can help the inventory manager share in these benefits by conducting appropriate examinations of current inventory practices.

Case Study 29: Identifying Obsolete Inventory Items

Inventory storage costs were getting out of hand even though the company was employing a new inventory management technique. The approach to managing inventory had been in place for about a year, but the promised decreases in the inventory carrying costs were not as high as expected. The inventory manager took an unusual step and asked internal audit to perform an audit of the largest warehouse. The manager hoped that audit could shed some light on the issue of inventory costs. Typically, the auditors performed a standard inventory audit, comparing the inventory levels from the inventory system with the stock on-hand.

This approach was primarily concerned with the controls over the security of the physical assets. However, management's concerns about cost savings presented the auditors with a different objective. As a result, the auditors decided to conduct other tests of the inventory in addition to verifying the inventory levels. The main objective was to determine if and how the overall inventory management costs could be reduced.

As a first step in the audit process, the auditors extracted and downloaded information from the inventory application to a file on the microcomputer (INV.FIL). The inventory system contained detailed information on each item held, including current inventory levels and the piece of equipment the item supported. For example, the warehouse might have 2,500 spark plugs (item # SP1283), which might fit into one or more engines (equipment # M308 and M611).

Item	Item #	Equipment	Equip't #
Spark Plug	SP1283	Engine - M308	SP1280
Spark Plug	SP1283	Engine - M611	SP6000
Flange	MI23F1	Engine - M612	T54921
...			
Transistor	D502T5	Circuit Board	12AG45
Transistor	D702T1	Circuit Board	14AF46
Transistor	D702T1	Circuit Board	18AG23
Resistor	R812R6	Circuit Board	14AG45

As part of the review over the security of the inventory, a random sample of items was chosen. The auditors compared the actual inventory levels with those on the inventory system.

The auditors hoped to use the inventory data to identify all items (parts) that supported equipment that was not being used anymore. Such items would no longer be of use to the company, but would still be incurring an inventory carrying cost (estimated at 15 to 25 percent of the original purchase value). Items no longer of use should have been removed from the inventory when the supported equipment was declared obsolete, decreasing the overall inventory levels and reducing the storage and inventory management costs. By removing these items from the inventory, the inventory carrying costs could be reduced, and the company might even be able to sell some of the obsolete items to other companies or for scrap.

For example, if a particular piece of equipment was declared obsolete, then all the items that were used to maintain the piece of equipment would not be required anymore unless the parts supported another piece of equipment as well. Thus, if Circuit Board 12AG45 was no longer required, Transistor D502T5 would be obsolete, because it was only used as a component for that particular circuit board. However, if Circuit Board 14AF46 was declared obsolete, Transistor D702T1 would still be required, because it is also a component for Circuit Board 18AG23.

The auditors obtained a file (OBS.FIL) containing information on each piece of equipment that had been declared obsolete during the last three years.

List of Obsolete Inventory (OBS.FIL)

Equip't	Equip't #	Date
Circuit Board	12AG45	95/03/31
Circuit Board	14AF46	95/11/21
. . .		
Spark Plug	91AX23	93/02/12

Using audit software, the auditors joined the complete inventory holdings file (INV.FIL) with the file containing the obsolete equipment list (OBS.FIL) to create a new inventory file showing all potentially obsolete inventory items (POT_OBS.FIL). This file contained a record for each item in inventory, with a new field called OBS_FLAG attached to each inventory record. The OBS_FLAG field had a value of "Y" if the "Equip't #" field on the inventory file matched with a piece of equipment in the obsolete equipment file and had a value of "N" if there was no match between the inventory and obsolete equipment files. Stating it another way, a value of "Y" in the OBS_FLAG field meant that the supported equipment had been declared obsolete; a value of "N" meant that the equipment was still in use.

For example, if Circuit Boards 12AG45 and 14AF46 were in the obsolete equipment file because they had been declared obsolete, then inventory records for Transistors D502T5 and D702T1 and Resistor R812R6 in the joined file would have a "Y" in the OBS_FLAG field. However, if Circuit Board 18AG23 was still in use, then Transistor D702T1 would have an "N" in the OBS_FLAG field for the inventory record with equipment # 18AG23.

List of Potentially Obsolete Inventory Items (POT_OBS File)

Item	Item #	Equip't	Equip't #	Obs_Flag
Spark Plug	SP1283	Engine - M308	SP1280	N
Spark Plug	SP1283	Engine - M611	SP6000	N
Flange	MI23F1	Engine - M612	T54921	N
. . .				
Transistor	D502T5	Circuit Board	12AG45	Y
Transistor	D702T1	Circuit Board	14AF46	Y
Transistor	D702T1	Circuit Board	18AG23	N
Resistor	R812R6	Circuit Board	14AG45	Y

Now the auditors could identify all items that were no longer of use because they only supported obsolete equipment. The first step was to remove all records for items that supported a piece of equipment that was still in use, such as Transistor D502T5. In order to do this, the auditors created a field (OBS) that contained a "0" if the supported piece of equipment was obsolete (OBS_FLAG=Y) or a "1" if the supported piece of equipment was still in use (OBS_FLAG="N").

List of Potentially Obsolete Inventory Items with Obsolete Indicator (POT_OBS File)

Item	Item #	Equip't	Equip't #	Obs_Flag	Obs
Spark Plug	SP1283	Engine - M308	SP1280	N	1
Spark Plug	SP1283	Engine - M611	SP6000	N	1
Flange	MI23F1	Engine - M612	T54921	N	1
. . .					
Transistor	D502T5	Circuit Board	12AG45	Y	0
Transistor	D702T1	Circuit Board	14AF46	Y	0
Transistor	D702T1	Circuit Board	18AG23	N	1
Resistor	R812R6	Circuit Board	14AG45	Y	0

Next, the file POT_OBS.FIL was summarized on Item Number, totaling the number of records for each item, the value of field OBS, and the total value of the inventory held for each item.

A new file (POT_OBS_SUM.FIL) was created, containing a single record for each Item Number with a field Tot_Cnt, showing the total number of records that were summarized; a field Obs_Cnt, showing the total of the value of the OBS field; and the field VALUE, calculating the Quantity *Unit_Price for each item in inventory.

Summarized List of Potentially Obsolete Inventory Items
(POT_OBS_SUM File)

Item #	Item	Tot_Cnt	Obs_Cnt	Tot_Value
D502T5	Transistor	1	0	14,398.00
D702T1	Transistor	2	1	24,576.00
. . .				
MI23F1	Flange	1	1	1,581.45
R812R6	Resistor	1	0	7,333.23
SP1283	Spark Plug	2	2	21,009.10

The value of the Obs_Cnt can only meet one of the following three conditions: Obs_Cnt is equal to "0"; Obs_Cnt is equal to Tot_Cnt; or Obs_Cnt is greater than "0" and less than Tot_Cnt. The following discusses the meaning of each possibility:

- **Obs_Cnt="0"**. The items where Obs_Cnt = "0" only contained inventory records with field OBS = "0" (OBS_FLAG="Y"). These items only support obsolete pieces of equipment and, thus, can be declared obsolete. In this example, items D502T5 and R812R6 can be declared obsolete because they do not support any equipment currently in use.
- **Obs_Cnt = Tot_Cnt**. Records where Tot_Cnt equals Obs_Cnt are items where OBS always equals "1" (OBS_FLAG = "N"), meaning the support equipment is not obsolete. Flange MI23F1 and Spark Plug SP1283 are examples of items that are required since they only support equipment still in use.
- **Obs_Cnt > 0 and Obs_Cnt < Tot_Cnt**. Records where Obs_Cnt is greater than "0" and Obs_Cnt is less than Tot_Cnt, are items that have records with OBS equal to "1" (OBS_FLAG = "N") and records with OBS equal to "0" (OBS_FLAG = "Y"). These items support both obsolete and in-use equipment and therefore cannot be declared obsolete. In this example, Transistor D702T1 supports equipment that is still in use (Circuit Board 12AG45) and equipment that has been declared obsolete (Circuit Board 14AF46). These items are still required; however, management should review the reorder levels and the inventory on-hand levels to determine if these can be adjusted to lower levels because the items no longer support as many pieces of equipment as they did initially.

In Case Study 29, the auditors enhanced a standard inventory audit to provide the inventory manager with useful information concerning the utility of the inventory. Using ACL on a microcomputer, the auditors were quickly able to review thousands of items in inventory and identify whether they supported in-use, obsolete, or a combination of in-use and obsolete equipment. For all items that only supported obsolete equipment, the current inventory was sold or scrapped and the automatic reorder flags were set to "N". For items supporting both obsolete and in-use equipment, inventory and reorder levels were reviewed and set to levels appropriate with the decreased demand.

The results of the audit provided management with sufficient information to decrease the overall inventory levels, thereby reducing the inventory management cost of the organization significantly. The timely identification of obsolete items increased the potential resale value of these items, generating more revenue than would have been realized if the items were sold for scrap. These savings alone paid many times over for the cost of the audit software used.

Audit should always be aware of how easy it is to modify or enhance current audit programs to provide better information to management and create value-added audit opportunities. The use of the computer and audit software can produce significant results.

Audit and Reengineering

Audit may be involved in the evaluation of reengineering initiatives at the request of senior management. Recent economic conditions have forced many companies to consider shutting down parts of the organization. In many cases, as illustrated in Case Study 30, audit has played a role in reviewing the results of the closures.

Case Study 30: Store Closure

The audit examined the controls over the activities associated with the closure of a retail outlet. The audit team wanted to determine if the inventory of goods were being properly safeguarded during the closure so as to prevent theft or losses and that the inventory and office equipment were sold at an appropriate price.

During the planning phase, the audit team extracted information from the inventory system for the retail store being closed. The audit team used the data to perform three initial analyses. First, the total

quantity and dollar value of the inventory and equipment at the store was calculated. Next, three lists of detailed transactions were produced. For the first initial analysis, auditor-defined criteria were used to identify equipment thought to have a high risk of theft. This included high-dollar, new technology and portable items such as computers and cash registers, which might be attractive to thieves. The second report listed a random sample of inventory items, and the third identified all items that had already been sold for less than market value.

Data analysis software allowed the audit team to perform the preliminary analyses required to identify the audit population and to select sample transactions for review. As a result, the on-site work was more effective and efficient, reducing the disruption to the client. Not surprisingly, the analyses identified several systemic control weaknesses in the store closure process.

The audit software programs developed for the store closure audit were successfully reused for other store closure audits, reducing the planning phase for subsequent closures by more than 50 percent and contributing to the safeguarding of valuable corporate assets. Given the large number of items in the inventory (1,033,000 plus), the use of the computer was essential to the audit.

At other times, the company's financial future depends on the successful implementation of reduction or downsizing initiatives. While often outside the traditional audit coverage, audit can contribute to the success of the program. Again, CAATTs can be used to support the audit of a reduction program, as shown in Case Study 31.

Case Study 31: Review of a Downsizing Program

The company established a downsizing program to streamline the number of employees by offering cash incentives to those willing to take early retirement or be laid off. The audit reviewed the overall efficiency and effectiveness of this program.

A search of the findings database revealed that a branch office had conducted an audit of a divisional reduction program. Several lines of inquiry were extracted from the audit program and used as part of the corporate-wide audit. The information required to determine if the corporate downsizing program had achieved its goals was contained in

several different information systems. In particular, the auditors had to extract information from the downsizing tracking system, the personnel information system, and the payroll system. A combination of the data from these systems was used to obtain a complete picture of all aspects of the reduction program.

The downsizing tracking system was used to identify the audit population (i.e., all employees who participated in the reduction program by accepting the cash incentives and leaving the company). The employee numbers of these individuals were used to extract information from the personnel information system, such as each employee's:

- Job classification and level
- Salary
- Number of years of service
- Department

The data from the personnel information system was then used to analyze the impact of the downsizing program. The auditors identified by department the number of employees prior to, and after, the implementation of the downsizing program and compared these numbers with the total number of employees in each department who had left under the program. This quickly highlighted departments where there had been hiring activity during the time the program was in force. For example, the auditors found one department that started with 200 employees, ended the year with 180 employees, but had 35 employees accept cash settlements. This meant that the department hired 15 people during the same period that the company was trying to reduce its overall numbers.

One of the audit objectives was to determine if the downsizing program was being properly administered and monitored. Another objective assessed whether or not the program was creating problems, such as a shortage of employees with certain types of skills, or if it was having a negative impact on employment equity initiatives by releasing a higher number of female employees.

To answer these objectives, the auditors identified all employees who had left the company and categorized them by age, gender, job classification, and other categories. By reviewing the data in aggregated format, the auditors obtained an overall picture of the program's impact. In particular, they noted that there were many entry- and senior-level engineers, but very few middle-level engineers—a potential problem in the short term.

The auditors also used the employee identification numbers to extract the amounts of each cash settlement and the total cost of all cash

settlements from the payroll system. Key fields such as years of service/employment and age data from the personnel information system and yearly salary amounts from the pay system were used by the auditors to perform a 100 percent verification of the cash settlement calculations and entitlements paid to each employee under the reduction program. Instances of overpayments were easily identified and recovery action taken. As well, the auditors identified employees who were underpaid and ensured that the checks were sent to them.

The audit was successful in providing senior management with an assessment of the impact and the effectiveness of the downsizing program, as well as the total cost of the program. To combine and analyze data from three systems would not have been practical without the use of automated tools and techniques.

In other reengineering cases, management may be concerned about legal requirements and corporate policies on issues such as employment equity and fair hiring practices. As in Case Study 32, audit may be asked to review the progress toward the goals of these types of programs.

Case Study 32: Fair Practices Program

The audit evaluated the promotion and hiring practices of the organization to determine the progress made toward the achievement of employment equity objectives (fair promotion and hiring practices). The auditors searched the corporate policies and procedures directory and found excellent background material on the corporate objectives of the fair practices program. These objectives were cut-and-pasted into the working papers and formed the basis of the audit program.

The auditors obtained hiring and promotion data from the personnel database for the current year and the previous four years. Using this data, they conducted a detailed analysis of trends in the hiring and promotion of employees. During the preliminary analysis phase of the audit, the total number of promotions was calculated for each department. Next, the number and percentage, compared to the total of promotions, were calculated by ethnic origin, gender, and physical disability, for each of the last four years. The overall percentages were compared to the target levels stated in the fair practices standards for the company.

The analysis enabled the auditors to obtain an overview of the progress towards fair hiring practices achieved by each department over

the last four years. In departments that had not achieved the objectives or standards, a further analysis was performed to examine the related data by job category and level (supervisory/nonsupervisory). This highlighted specific job classifications where the progress toward fair promotion practices was below company standards. In these cases, a follow-up was conducted on-site with the staffing section to review the underlying reasons. Next, all hirings were examined using a similar type of analysis.

The analyses performed by the auditors allowed them to focus their attention on the more time-consuming, manual portion of the audit in the high-risk departments. It also enabled the auditors to give management an overview of the progress to date and conduct trend analysis for the future. The use of the computer significantly reduced the time involved and simplified the audit process, while maintaining or improving the results.

Pressures on organizations to be more effective will also have an impact upon the types of activities undertaken by audit. Senior management will expect audit to contribute by assessing important corporate programs. This in turn will cause audit to evaluate its current methods, tools, and techniques. In many cases, CAATTs will play an important role in assisting audit to discharge its duties and in contributing to managerial knowledge.

Audit and Benchmarking

The ultimate effect of auditing is, of course, the adjustment of the organization to the critically relevant findings of the auditors as empowered, key, value-adding personnel (Will [1995]). This recognizes the fact that information systems are the other side of the organizational coin—that information is a strategic resource; that organizational structures have to support desirable organizational behavior; that auditors are part of the management team; and that management must reengineer the organization in order to adjust to environmental changes. But where does audit and reengineering fit into the organization?

Benchmarking has rapidly become one of management's favorite reengineering tools. Companies from IBM and Xerox to the mom-and-pop operations on the corner have participated in benchmarking exercises. But where do benchmarking and internal audit stand? To understand the answer to this question, you must understand the basics of each, including their differences and similarities:

Benchmarking is a continuous and formal process for measuring work processes and functions of organizations that are acknowledged leaders, representing best practices, for organizational improvement.

Internal audit is an independent, objective, assurance, and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve effectiveness of risk management, control, and governance processes.

The two activities have many similarities, but there are also several fundamental differences between them.

The first stage in benchmarking is the identification of the key players, their requirements, and the definition of the processes to be benchmarked. Benchmarking can be internal to the organization, within the competitive industry, or functional/generic in nature and outside the industry sector entirely. Benchmarking also often includes a partner from an external organization.

In contrast, internal audit's client is the company's senior management and does not include external organizations. Another important distinction is that the client's requirements may drive the benchmarking schedule, the scope of the activities, reporting format, and so on. Auditor independence from these types of influences remains a key aspect of internal audit.

The second stage in benchmarking is the formation of the benchmarking team, which usually includes a project manager, a benchmarking facilitator, and members of client operations. Internal audit teams may also have project leaders and subject matter experts, but they do not always contain individuals from the client operations. As more audit departments embrace the ideas of collaborative audits, staff from the client areas are becoming more involved in the audit process. However, at times, the issue of audit independence may override the desire to involve persons from the client area.

The third stage is the identification of benchmarking partners. This could include outside experts, researchers, consultants, and other organizations such as competitors, universities, research establishments, and governments. The team searches for best practices within the company, within the industry sector, or even worldwide. While many internal auditors may perform similar steps when researching performance standards, audit usually only considers industry-or company-based norms.

The next stage in the benchmarking process is the analysis of information. The information-gathering activities may include telephone calls, meetings, interviews, surveys, publication and media searches, and data collection and analysis. A successful benchmarking exercise will include a thorough analysis of the current conditions and the identification of the performance gap, the difference between the current performance of the organization and the performance level of the benchmarking partner. In

many ways, the activities performed by internal audit are consistent with these benchmarking activities. Auditors' skills in conducting analytical reviews and control framework assessments and techniques (such as Pereto, Cause-and-Effect, and Fishbone) can be extremely useful to benchmarking teams.

The final stage of benchmarking is the writing of the benchmarking report, communication of the findings, and the identification of recommendations. The main deliverables are similar to the internal audit reporting phase, except that the benchmarking report is often shared with the benchmarking partners, even when the partners are external to the organization.

In some organizations, internal audit is using audit reports that identify efficient and effective operations as standards or models for other client areas. Some internal audit organizations are also employing the concepts of partners, best practices, and generic research during operational audits. In other organizations, internal audit is an integral part of benchmarking teams, participating fully in all stages of the process.

Whether benchmarking is simply the latest management buzzword—a new name for an old idea—or a new and useful management tool for making significant improvements, internal audit must understand the basics of benchmarking to effectively audit and participate in benchmarking activities. Internal audit can take a proactive approach to benchmarking to the benefit of the company. Remember, there is no single path to success, but you won't get there by sitting still either!

Case Study 33: Audit versus Benchmarking

Senior management at ABC Corporation was not happy, although the employees seemed happy. The billing system's error rate had increased despite spending thousands of dollars on new color terminals, ergonomic furniture, and a newly designed office layout for the data entry section. The president decided the answer lay in benchmarking with a local utility company, one of the world leaders in data entry. A benchmarking team was established, with representatives from the IS group and data entry staff.

After several weeks of performing an internal review of the billing application, including reviewing source documents, types of data to be entered, screen layouts, and uses of color to highlight key fields, the benchmarking team felt ready to approach the utility company. At the end of their study, the benchmarking team determined that the utility company performance gains were achieved through the introduction of new technology and the development of an employee training

program. Since ABC Corp. had already upgraded its computer hardware and software, the benchmarking team felt that training was the missing ingredient.

The company's training officer assured them that a quality training program had been developed and that all data entry operators had participated. However, a retraining program was initiated, and all data entry operators received an additional two days of training. Everyone was convinced that the project was a success; however, the statistics for the next month showed that the error rate was still as high as it had been prior to retraining. The benchmarking exercise was declared a failure.

A short time later, a routine audit was performed on the billing section. Of course, the auditor noticed immediately that the error rate was significantly higher than a year ago. On questioning the head of the input section, the auditor learned that new computer terminals and office furniture had been purchased. In fact, the entire workspace had been reorganized, with input from the employees. As a result, everyone was much happier with the working conditions and motivation was high.

The auditor obtained the detailed error data and began analyzing the information. The first issue that stood out was that 87 percent of the errors were attributed to 12 percent of the operators. When management heard this, they were ready to fire all of the operators involved, but the audit director asked them to wait until the audit was completed, and a three-day extension was given.

The auditor reviewed the test scores from the training course and examined the detailed transactions from the previous day. Two of the clerks had consistently high error rates, and the rest showed an increase in the afternoon. The auditor spent the next afternoon in the invoice-processing section and still did not know what was causing the errors to increase. The operators were working as hard as in the morning, their concentration had not lessened, and even the average time to process a bill was comparable.

On Wednesday morning, although it was another rainy day, the auditor was optimistic. Interestingly, the data from Tuesday had very few errors. The overall error rate for the clerks in question was not significantly different from the error rate for the other operators, but still the auditor did not know the cause for the change. The error rate associated with Wednesday's data was no higher than for the other operators. After a pleasant walk at lunch, the auditor went back to the invoice-processing section, with only half a day left to arrive at an explanation before these operators would be fired. The auditor got to the floor just after one o'clock and suddenly knew the answer. An

extension of one more day was requested to check a few figures and to prepare the final report.

As expected, the error rate in Thursday's data was higher than company standards. However, as a result of the audit, no operators were fired, and the error rate was reduced to a new low. The total cost was $500 to have the movers come in and rearrange the furniture so that the afternoon sun did not reflect off the screens. Another minor change to the billing program helped the two color-blind operators reduce their error rates on key fields that had been highlighted using red or green lettering.

In Case Study 33, why did benchmarking fail where audit succeeded? The benchmarking team was too anxious to find the answers outside of the company. As a result, they failed to fully analyze the internal data for cause and effect. The auditor, on the other hand, focused on the internal data, used analytical tools and critical skills, and also had a bit of luck with his observations.

This fictitious example is not meant to present benchmarking in a bad light, but to stress the importance of performing a thorough analysis of the current conditions. These analyses are supported by audit software, and often internal auditors have a great deal of expertise and can make a valuable contribution to benchmarking activities.

Summary and Conclusions

The use of technology and audit software is no longer constrained by hardware platforms, application systems, or types of audits being performed. The economic pressures in the business world and the benefits that can be accrued in all phases of the audit process and the administration of the audit function demand that audit management maximize their use of CAATTs. Audit organizations and auditors must challenge the status quo and search for new ways to perform standard tasks. They must also look for new opportunities for audit to contribute to the well-being of the organization. Modern audit software can assist audit in changing and producing better results.

As management continues to adjust to the economic, political, and business pressures outside and within the organization, audit will be asked to do more and to do it more efficiently and effectively. Are we up to the challenge, or will we be outsourced? The use of CAATTs and innovative techniques may be the most important factor in answering this question.