

15

AUDITING THE EXPENDITURE CYCLE

POOR INTERNAL CONTROLS RESULT IN A MATERIAL UNDERSTATEMENT OF ACCOUNTS PAYABLE AND NET INCOME

TruServ is a hardware store buying cooperative. On March 31, 2000, it reported a loss of more than \$131 million for the fiscal year 1999, which included expenses it failed to report during fiscal years 1997 and 1998. The misstatements in TruServ's financial statements came to light when the entity's accounting staff closed its books for fiscal year 1999. The largest component of the previously unreported loss represented increases in cost of sales and accounts payable in the amount of \$74.5 million.

A significant component of the problem represented a year-end accrual for unbilled merchandise. TruServ routinely made an accrual for merchandise it had received but for which it had not yet been billed. TruServ estimated the amount of the accrual for merchandise payable by using a report called the "open receiver file." However, the "open receiver file" was not accurate. Distribution center and warehouse employees were not keeping accurate records of the merchandise that was received. As a result, accounts payable was understated by approximately \$36.9 million. Furthermore, because inventory was based on a physical count, cost of goods sold was also understated, resulting in an overstatement of net income.

In addition, TruServ claimed approximately \$20 million in reductions in accounts payable related to claims for returned merchandise and allowances. If merchandise returned from a member could not be resold due to damage, or some other reason, the merchandise should have been removed from inventory and charged to cost of goods sold. Instead, TruServ removed the merchandise from inventory and reduced the amount of its merchandise payable by the same amount. However, it never received authorization to return merchandise to its vendors. As a result, accounts payable and cost of goods sold were understated, overstating net income.

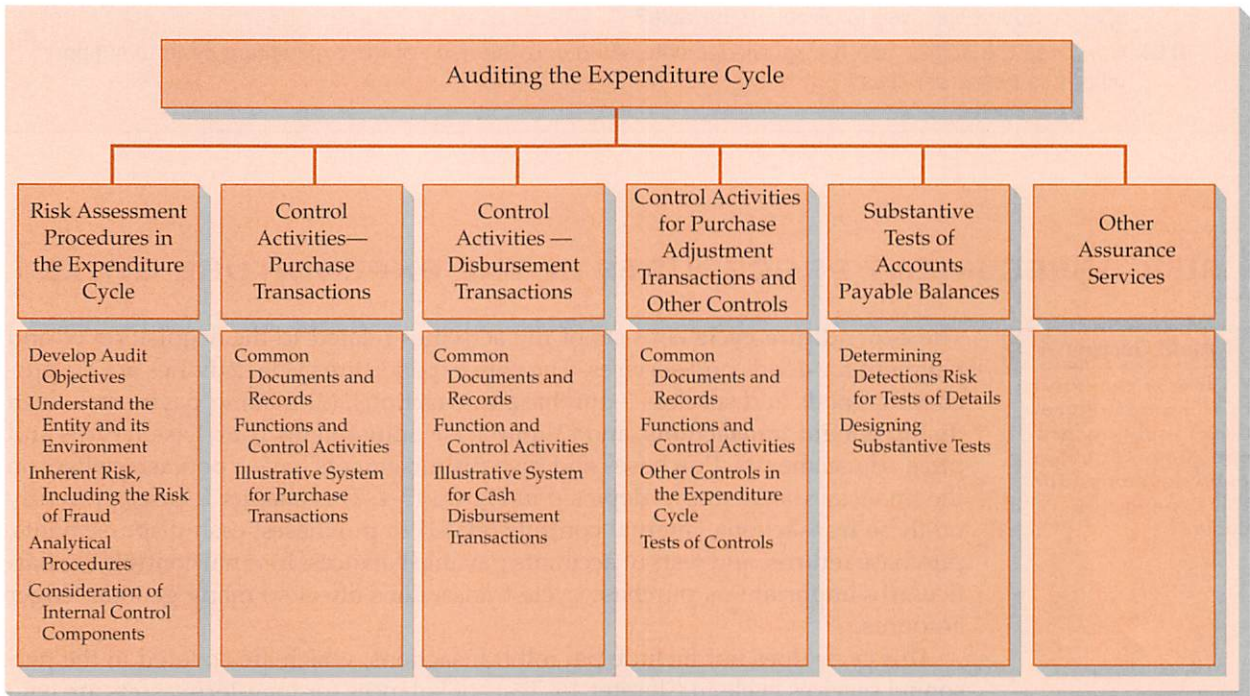
Finally, in 1999 TruServ wrote off approximately \$16.6 million in inventory adjustments for lost inventory, damaged goods, and the closing of distribution centers. TruServ should have reduced inventory and increased cost of goods sold. However, warehouse personnel did not correctly use inventory adjustment codes. As a result, TruServ wrote off the inventory and reduced its accounts payable by the same amount.

Each of these represented misstatements related to the expenditure cycle, ultimately resulting in a material understatement of accounts payable and expenses. Chapter 15 addresses the types of internal controls that would normally control these types of transactions. In addition, the chapter presents substantive audit procedures that should be performed by the auditor to identify these same types of misstatements.

Sources: SEC Accounting and Auditing Enforcement Releases 1727 and 1728, March 4, 2003.

[PREVIEW OF CHAPTER 15]

Chapter 15 focuses on specific aspects of auditing the expenditure cycle. It begins with a discussion of planning activities related to the expenditure cycle. It then focuses on specific controls commonly seen in the expenditure cycle as well as specific substantive tests related to the expenditure cycle. The following diagram provides an overview of the chapter organization and content.



Chapter 15 focuses on the following aspects of the auditor's decision process associated with auditing the expenditure cycle.

focus on audit decisions

After studying this chapter you should understand the factors that influence the following audit decisions.

- D1.** What is the nature of the expenditure cycle, and how are specific audit objectives developed for the expenditure cycle?
- D2.** How does understanding the entity and its environment affect audit planning decisions in the expenditure cycle?
- D3.** What are important inherent risks in the expenditure cycle?
- D4.** How might the results of analytical procedures indicate potential misstatements in the expenditure cycle?
- D5.** What are the relevant aspects of internal control components for the expenditure cycle?
- D6.** What should be considered in evaluating control activities for purchase transactions?

- D7.** What should be considered in evaluating control activities for cash disbursements transactions?
- D8.** What should be considered in evaluating control activities for purchase adjustments?
- D9.** What are the relevant aspects of tests of controls when the auditor plans to assess control risk below the maximum for expenditure cycle transactions?
- D10.** What are the factors involved in determining the acceptable level of tests of details risk for accounts payable assertions?
- D11.** How does the auditor determine the elements of an audit program for substantive tests to achieve specific audit objectives for accounts payable?
- D12.** How does the auditor use the knowledge obtained during the audit of the expenditure cycle to support other assurance services?

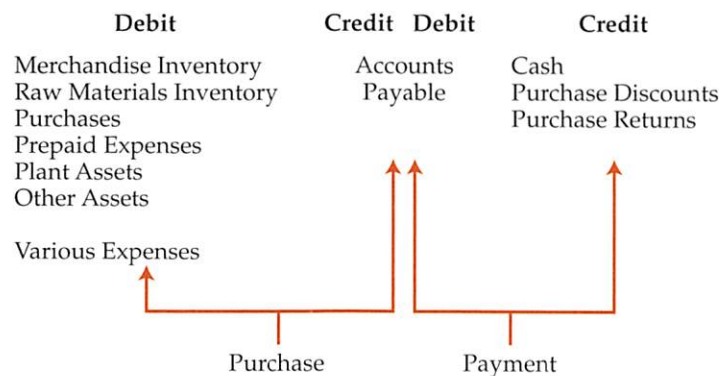
[RISK ASSESSMENT PROCEDURES IN THE EXPENDITURE CYCLE]

Audit Decision 1
 ■ What is the nature of the expenditure cycle, and how are specific audit objectives developed for the expenditure cycle?

The **expenditure cycle** consists of the activities related to the acquisition of and payment for goods and services. The core expenditure cycle activities are (1) purchasing goods and services—**purchase transactions**, (2) making payments—**cash disbursement transactions**, and (3) **purchase adjustments** (purchase returns and price adjustments). Purchases and cash disbursements have a pervasive effect on the financial statements as depicted in Figure 15-1. This chapter focuses primarily on these transactions, internal controls related to purchases, cash disbursements, purchase returns, and tests of accounts payable balances. Internal controls are particularly important as purchase cycle transactions affect so many general ledger accounts.

This cycle does not include payroll transactions, which are covered in the personnel services cycle in Chapter 16. Tests of balances for long-term assets are covered in Chapter 17 on financing and investing activities. Chapter 18 covers tests of balances of investment securities and cash balances. This chapter focuses on the internal controls in the expenditure cycle that affect each of these other audit areas.

Figure 15-1 ■ Expenditure Cycle



DEVELOP AUDIT OBJECTIVES

Auditors should obtain sufficient, competent evidence for each audit objective pertaining to purchase cycle transactions. Recall from Chapter 6 (see Figure 6-2) that specific audit objectives are derived from five categories of management's assertions. Specific audit objectives are developed for transactions, balances, and disclosures related to a specific transaction cycle. These audit objectives for the expenditure cycle are shown in Figure 15-2. Specific expenditure cycle transactions are keyed to numbered audit objectives (C1 ... C4, EO1 ... EO4, and so on) that are used throughout Chapter 15.

UNDERSTAND THE ENTITY AND ITS ENVIRONMENT

An important aspect of audit planning includes understanding the entity and its environment, the external market forces driving the business sector, and how these forces impact the entity's expenditure cycle. Every business faces different

Figure 15-2 ■ Specific Audit Objectives for the Expenditure Cycle

Specific Audit Objectives	
Transaction Objectives	
Occurrence.	Recorded purchase transactions represent goods or services received during the period (EO1). Recorded cash disbursement transactions represent cash received during the period (EO2). Recorded purchase returns represent goods returned during the period (EO3).
Completeness.	All purchases (C1), cash disbursements (C2) and purchase returns (C3) made during the period were recorded.
Accuracy.	All purchases (VA1), cash disbursements (VA2), and purchase returns (VA3) are accurately valued using GAAP and correctly journalized, summarized, and posted.
Cutoff.	All purchases (EO1 or C1), cash disbursements (EO2 or C2), and purchase returns (EO3 or C3) have been recorded in the correct accounting period.
Classification.	All purchases (PD1), cash disbursements (PD2), and purchase returns (PD3) have been recorded in the proper accounts.
Balance Objectives	
	Existence. Accounts payable represent amounts owed to vendors at the balance sheet date (EO4).
	Completeness. Accounts payable includes all payments owing to vendors at the balance sheet date (C4).
	Rights and Obligations. Accounts payable are obligations of the entity at the balance sheet date (RO1).
	Valuation and Allocation. Accounts payable are correctly stated at the amounts owed (VA4).
Disclosure Objectives	
	Occurrence and Rights and Obligations. Disclosed purchase cycle events and transactions have occurred and pertain to the entity (PD4).
	Completeness. All purchase cycle disclosures that should have been included in the financial statements have been included (PD5).
	Classification and Understandability. Revenue cycle information is appropriately presented and described and information in disclosures is clearly expressed (PD6).
	Accuracy and Valuation. Purchase cycle information is disclosed accurately and at appropriate amounts (PD7).

market forces that place differing demands on the company's cash flow. Recall that an entity's net operating cycle represents the time from using cash to purchase goods or services to collecting cash from the sale of goods or services. For a manufacturer the gross operating cycle is estimated by the average number of days it takes to turn inventory and collect receivables. The net operating cycle represents the gross operating cycle reduced by accounts payable turn days, the amount of time that an entity's suppliers will let it use trade credit before requiring payment for goods and services. Understanding the economic drivers in the expenditure cycle is usually critical for audits of manufacturers, wholesalers, retailers, and some service companies.

Audit Decision 2

■ How does understanding the entity and its environment affect audit planning decisions in the expenditure cycle?

Figure 15-3 illustrates the importance of understanding the expenditure cycle for five different entities, which are discussed throughout Part 4 of the text. This chapter continues the discussion of five industries introduced in Chapter 14: a manufacturer of construction machinery and equipment (SIC 3531) a manufacturer of electronic computers (SIC 3571), a retail grocer (SIC 5411), a hotel (SIC 7011), and a local school district (SIC 8211). These examples define a wide spectrum of underlying business practices and an equally wide spectrum of risk for the auditor. The auditor would normally obtain this understanding through previous experience with the entity, obtaining information from trade associations, reading business periodicals and newspapers, and consulting publications of industry information such as Robert Morris Associates or Value Line.

Audit Decision 3

■ What are important inherent risks in the expenditure cycle?

INHERENT RISK, INCLUDING THE RISK OF FRAUD

In assessing inherent risk for expenditure cycle assertions, the auditor should consider pervasive factors that may affect assertions throughout financial statements as well as factors pertaining only to specific assertions in the expenditure cycle.

accounts payable trends

A number of companies have reported problems with making duplicate payments. As a result, many companies outsource the process of invoice review. One company that reviewed its last three years' invoices discovered that it had made five quarterly state income tax payments, not four. After collecting interest for three years, the state of Texas cheerfully refunded the \$2 million. RECAP, Inc. reports that typically one in 500 invoices that companies have already paid includes overcharges or was a duplicate payment.

Other recent trends in the accounts payable area include:

- Installing or increasing the use of EDI, ERS, and electronic invoicing.
- Improving efficiency, timeliness, and processes.
- Installing or increases the use of imaging.
- Improving customer services
- Installing or increasing the use of electronic payments.
- Cleaning up vendor files.

Source: www.recapinc.com.

Figure 15-3 ■ Understanding an Entity's Expenditure Cycle

<p>Example Industry Traits</p>	<p>Developing a Knowledgeable Perspective about the Entity's Financial Statements (Industry Median)</p>	<p>Assessing the Risk of Material Misstatement</p>
<p><i>Mfg. of Construction Machinery and Equipment</i></p> <ul style="list-style-type: none"> • Significant spending for raw materials. • Purchases is a core process that influences gross margins. 	<p>Net Operating Cycle: 97 days Accounts Payable Turn Days: 33 days Accounts Payable to Total Assets: 15.2% Current Ratio: 1.7 Quick Ratio: 0.7</p>	<ul style="list-style-type: none"> • Concerns about purchase cutoff at year-end. • Concerns about potential unrecorded liabilities.
<p><i>Computer Mfg.</i></p> <ul style="list-style-type: none"> • Purchases must be managed aggressively to minimize inventory obsolescence. 	<p>Net Operating Cycle: 72 days Accounts Payable Turn Days: 40 days Accounts Payable to Total Assets: 19.4% Current Ratio: 1.6 Quick Ratio: 0.9</p>	<ul style="list-style-type: none"> • Vendors often offer price concessions or terms such that goods do not have to be paid for until manufactured product is resold, leading to concerns about con- signment traits of inventory. • Concerns about purchases cutoff at month-end. • Concerns about potential unrecorded liabilities.
<p><i>Retail Grocer</i></p> <ul style="list-style-type: none"> • Purchases a wide array of products including prod- ucts with perishable characteristics. • Purchasing and supply chain management is an important aspect of profitability. • Wide variety of vendors. 	<p>Net Operating Cycle: 9 days Accounts Payable Turn Days: 15 days Accounts Payable to Total Assets: 3.4% Current Ratio: 1.2 Quick Ratio: 0.4</p>	<ul style="list-style-type: none"> • Concerns about accounting for advertising allowances and other price concessions to stock merchandise. • Concerns about purchases cutoff at month-end. • Concerns about potential unrecorded liabilities.
<p><i>Hotel</i></p> <ul style="list-style-type: none"> • Purchases include food for restaurant and conven- tion business. • Purchases are a less significant operating cost com- pared to retailer or manufacturer. 	<p>Net Operating Cycle: n/a Accounts Payable Turn Days: n/a Accounts Payable to Total Assets: 3.4% Current Ratio: 0.7 Quick Ratio: 0.6</p>	<ul style="list-style-type: none"> • Purchases and accounts payable are less central to core business, resulting in reduced potential for unrecorded liabilities. • It is common to have significant unearned income.
<p><i>Local School District</i></p> <ul style="list-style-type: none"> • Purchases are incidental to the core product, edu- cating students. • Core process may not be significantly affected by price increases. 	<p>Net Operating Cycle: n/a Accounts Payable Turn Days: n/a Accounts Payable to Total Assets: 3% Current Ratio: 1.8 Quick Ratio: 1.5</p>	<ul style="list-style-type: none"> • Purchases and accounts payable are not central to core business, resulting in reduced potential for unrecorded liabilities.

Pervasive factors that might motivate management to misstate expenditure cycle assertions include:

- Pressures to understate expenses in order to report achieving announced profitability targets or industry norms, which were not achieved in reality owing to factors such as global, national, or regional economic conditions that affect operating costs, the impact of technological developments on the entity's productivity, or poor management.
- Pressures to understate payables in order to report a higher level of working capital when the entity is experiencing liquidity problems or going-concern doubts.
- Vendors may be tardy in sending invoices resulting in cutoff problems in recording payables.

These factors lead to a greater risk of understatement than overstatement of expenditures and payables.

The auditor should also consider the industry-related factors of the availability and price volatility of the raw materials and products needed by the entity to remain in business. For example, a grocer deals with numerous vendors and prices; intense market competition tends to stabilize prices. A shortage or price increase of an individual item has little effect on industry operation. Customers readily substitute green apples for red apples. This industry has limited exposure to the risk of raw material shortages or sudden price swings affecting their financial results. This may not be the case for the computer assembler, who may be dependent on a single vendor for a unique component critical to the assembled product. Should the vendor be unable to supply the part, the computer manufacturer's production is stalled, shipment of finished product is delayed, and the cash cycle is impaired. Industries whose core products cannot be substituted for other products are extremely vulnerable to price swings and shortages. Fuel for the airline industry is a good example of such a product. The auditor's knowledge of industry-related factors is particularly important to assessing the risk of misstatement in the financial statements.

The expenditure cycle is especially prone to a risk of employee fraud through unauthorized disbursement of cash. Other factors that may contribute to misstatements in the expenditure cycle assertions include the following:

- There is usually a high volume of transactions.
- Unauthorized purchases and cash disbursements may be made.
- Purchased assets may be misappropriated.
- There may be duplicate payment of vendor's invoices.
- Contentious accounting issues may arise concerning such matters as whether a cost should be capitalized or expensed (e.g., the treatment of repairs and maintenance costs or the classification of a lease as an operating or capital lease).

The auditor should consider each of these factors when assessing inherent risk for the expenditure cycle.

Finally, a growing trend in purchasing systems is the use of Electronic Data Interchange (EDI) or image processing systems. In EDI, the entity and its suppliers use communication links to transact business electronically. Purchases and cash disbursements may be consummated entirely by the exchange of electronic messages between the parties. In image processing systems, documents are scanned and converted into electronic images to facilitate storage and reference,

and the source documents may not be retained after conversion. In image processing systems hard copy documents may only be available for a limited length of time. In addition, electronic evidence may not be retrievable after a specified period of time if files are changed and if backup files do not exist. Therefore, the auditor should consider the time during which information exists or is available in planning the audit and making decisions about the nature, timing, and extent of tests of controls (if relevant) and substantive tests.

ANALYTICAL PROCEDURES

Audit Decision 4

■ How might the results of analytical procedures indicate potential misstatements in the expenditure cycle?

Analytical tests are effective in identifying expenditure cycle accounts that are misstated. Analytical procedures risk is the element of detection risk that analytical procedures will fail to detect material errors. As previously stated, analytical procedures are extremely cost effective. Some example analytical procedures that may apply to the expenditure cycle are presented in Figure 15-4.

Many analytical procedures focus on the relationship between purchases and accounts payable. If a company is growing, it is common to expect purchases, inventory, and accounts payable to grow at consistent rates. The auditor's knowledge of the volume of purchases, combined with prior experience in terms of **accounts payable turn days** (the average number of days it takes to retire payables), is useful in estimating current year's payables. While ratios like the current ratio are easy to calculate, they may fluctuate based on influences from cycles other than the expenditure cycle, such as sales or investments.

Figure 15-4 ■ Analytical Procedures Commonly Used to Audit the Expenditure Cycle

Ratio	Formula	Audit Significance
Accounts Payable Turn Days	$\text{Avg. Accounts Payable} \div \text{Purchases} \times 365$	Prior experience in accounts payable turn days combined with knowledge of current purchases can be useful in estimating current payables. A shortening of the period may indicate completeness problems.
Cost of Goods Sold to Accounts Payable	$\text{Cost of Goods Sold} \div \text{Accounts Payable}$	Unless the company has changed its payment policy, these amounts should change by approximately the same percentage from year to year.
Payables as a % of Total Assets	$\text{Accounts Payable} \div \text{Total Assets}$	Common sized balances in accounts payable are useful in comparing with industry data. A significant decline in this ratio may indicate completeness problems.
Current Ratio	$\text{Current Assets} \div \text{Current Liabilities}$	A significant increase in the current ratio compared to prior year's experience may indicate a completeness problem. However, this ratio may also be influenced by changes in asset accounts.
Quick Ratio	$\text{Current Monetary Assets} \div \text{Current Monetary Liabilities}$	A significant increase in the current ratio compared to prior year's experience may indicate a completeness problem. However, this ratio may also be influenced by changes in asset accounts.

Audit Decision 5

■ What are the relevant aspects of internal control components for the expenditure cycle?

CONSIDERATION OF INTERNAL CONTROL COMPONENTS

The auditor's required understanding of internal controls applicable to the expenditure cycle extends to all five internal control components. Four of the components are discussed in the following subsections. The control activities component is discussed later in the chapter in separate sections for purchases, cash disbursements, and purchase adjustments.

Control Environment

The expenditure cycle offers numerous opportunities for employee fraud in processing purchase and cash disbursements transactions. Purchasing agents may be subjected to pressures from solicitous vendors, including offers of "kickbacks" for transacting more business with those vendors. A strong tone at the top of the organization, and a control environment that emphasizes integrity and ethical values is extremely important in the expenditure cycle.

Management's commitment to competence should be reflected in the hiring, assignment, and training of personnel involved in processing purchase and cash disbursement transactions, maintaining custody of purchased assets, and reporting on expenditure cycle activities. Management may also require that employees involved in processing cash disbursements or maintaining custody of purchased assets be bonded.

The client's organizational structure and management's assignment of authority and responsibility over expenditure cycle activities should be clearly communicated and provide for clear lines of authority, responsibility, and reporting relationships. If management is held too rigidly to delivering targeted earnings, it may cause the incentive to misstate the financial statements through the management of purchases cutoff of other steps that result in unrecorded liabilities. On the other hand, if management is not held accountable for the use of the entity's resources, it is unlikely that entity personnel will take internal controls seriously. When understanding how management is held accountable for resources it is helpful to determine:

- The reports used by management to evaluate the entity's performance review.
- How often and how quickly management reports are reviewed.
- The decisions that are based on the reports.
- The entity's policies for following up on issues raised by key reports.

Risk Assessment

Management risk assessments related to expenditure cycle activities include consideration of such matters as:

- The risk of purchasing kickbacks.
- The risk of employee fraud through fraudulent purchases or cash disbursements.
- The entity's ability to meet cash flow requirements for purchase transactions.
- Loss contingencies associated with purchase commitments.

- The continued availability of important supplies and the stability of important suppliers.
- The effect of cost increases on the entity.
- The risks associated with the use of electronic data interchange and image processing systems.

If management demonstrates appropriate consideration of these risks, together with balancing control activities that mitigate these risks, the likelihood of misstatements associated with these circumstances is reduced.

Information and Communication (Accounting System)

An understanding of the accounting system requires knowledge of the methods of data processing and key documents and records used in processing expenditure cycle transactions. It is important to understand the flow of transactions through the accounting system from initiating the transaction to its recording in the general ledger and eventual summarization in the financial statements. Key information the auditor should understand includes:

- How purchases, payments, and returns are initiated.
- How purchase transactions are accounted for as goods and services are received or goods are returned.
- What accounting records, documents, accounts, and computer files are involved in accounting for the various stages of each purchase cycle transaction.
- The process by which an entity initiates payment for goods and services.

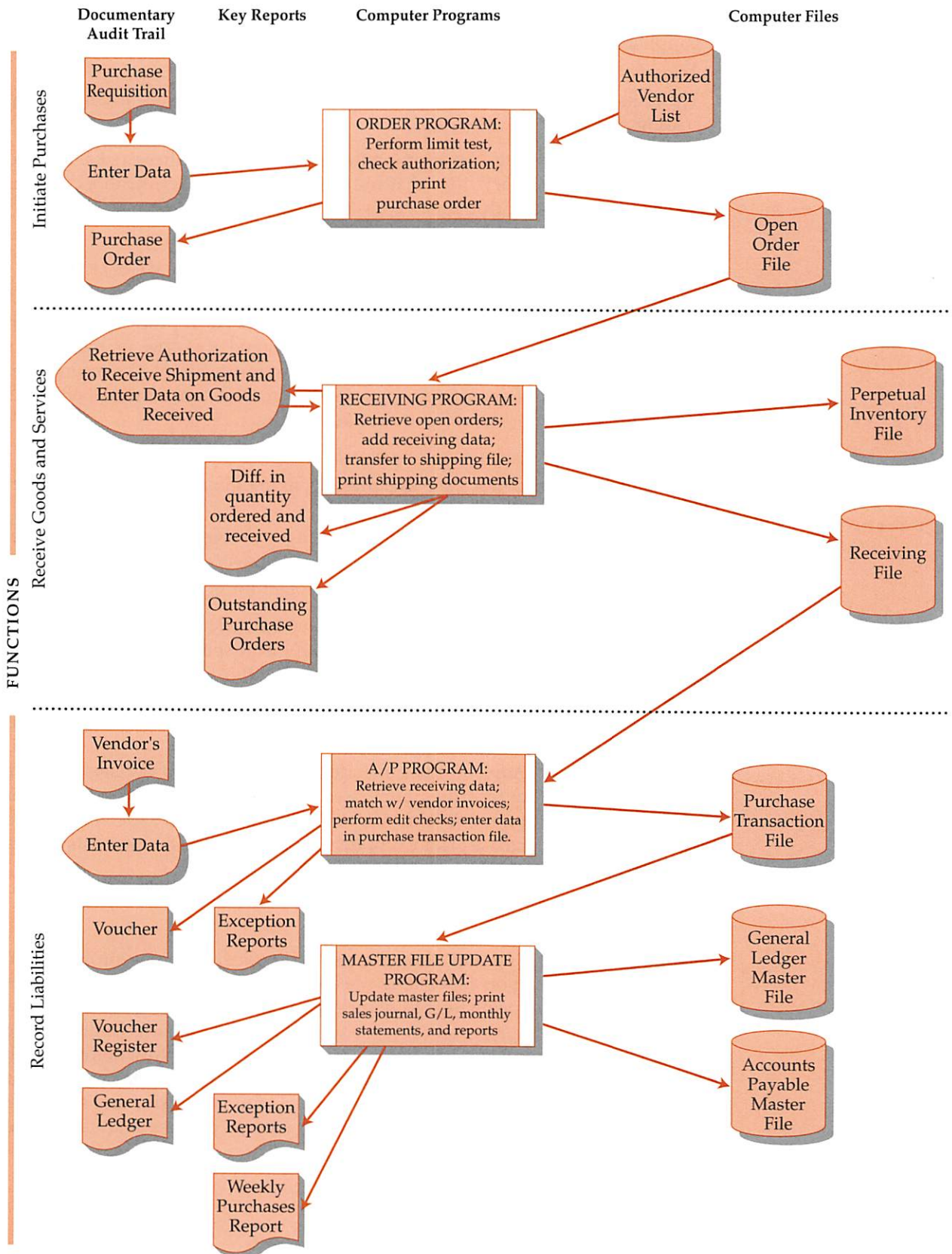
Figure 15-5 is an overview flowchart showing the basic features of a computerized system for processing purchases and cash disbursement transactions. Note that the flowchart supposes the receipt and entry of third-party documents. With the instant transfer of information via electronic data interchange, these documents may not be available. The flowchart is not intended to show every document, record, process, or account involved.

Variations in accounting systems include the use of either a purchases journal or a voucher register for recording purchases. A voucher system is assumed in this chapter. The key accounting records shown in the flowchart are the voucher register for recording purchases from suppliers and the cash disbursements journal or check register for recording payments to suppliers.

Monitoring

Several types of ongoing and periodic monitoring activities may provide management with information concerning the effectiveness of the other internal control components in reducing the risk of misstatements. Monitoring activities about which the auditor should obtain knowledge include (1) ongoing feedback from the entity's suppliers concerning any payment problems or future delivery problems, (2) communications from external auditors regarding reportable conditions or material weakness in relevant internal controls found in prior audits, and (3) periodic assessments by internal auditors of control policies and procedures related to the expenditure cycle.

Figure 15-5 ■ System Flowchart—Purchase Transactions



LEARNING CHECK

- 15-1** Describe the nature of the expenditure cycles and identify the major classes of transactions in the cycle.
- 15-2** State the audit objectives for expenditure cycle transactions and balances that relate to each financial statement assertion category.
- 15-3** Describe the nature of one entity where the expenditure is significant to its financial statements and one entity where it is not. Explain the differences between the two. How would these difference affect audit strategy?
- 15-4** Explain several factors that the auditor should consider when allocating materiality to the audit of the expenditure cycle.
- 15-5**
- Identify several pervasive factors that might motivate management to misstate assertions in the expenditure cycle.
 - Identify several industry-related factors that might influence the risk of material misstatement in the expenditure cycle.
 - What other factor might influence the risk of material misstatement in the expenditure cycle?
 - Why are auditors more concerned about the understatement of liabilities than the overstatement of liabilities?
- 15-6**
- Identify several analytical procedures that the auditor might use to assess the likelihood that a material misstatement exists in the expenditure cycle.
 - Why would the analysis of accounts payable turnover provide for more accurate analysis of accounts payable than analyzing the current ratio?
- 15-7** Identify elements of the control environment that are relevant to initiating and recording purchases.

KEY TERMS

Accounts payable turn days, p. 695
 Cash disbursement transactions,
 p. 690

Expenditure cycle, p. 690
 Purchase adjustments, p. 690
 Purchase transactions, p. 690

CONTROL ACTIVITIES—PURCHASE TRANSACTIONS**Audit Decision 6**

■ What should be considered in evaluating control activities for purchase transactions?

In this section, we consider control activities of an entity that are relevant to the specific audit objectives for purchase transactions. We begin by identifying some of the key documents and records used in processing transactions for purchases on account. Next, the major functions involved in executing and recording purchases of goods and services are identified and explained. The discussion of the functions includes how control procedures are interwoven to reduce the risk of misstatements in the financial statement assertions that are affected by purchase transactions. Among the control activities considered are segregation of duties, physical controls, management controls, and computer application controls.

Virtually every company that requires an audit has a computerized accounting system. Hence, this text focuses on how management would implement control

activities using programmed control procedures. Recall from Chapter 10 that there are two types of computer controls:

- *General controls*, which relate to the computer environment and have a pervasive effect on computer applications.
- *Application controls*, which relate to the individual computerized accounting applications, such as the expenditure cycle.

If general controls are ineffective, reliance can rarely be placed on the application controls. For purposes of discussion, this chapter will assume that general controls are effective, as are the followup procedures that the entity uses to investigate issues that are triggered by application controls.

COMMON DOCUMENTS AND RECORDS

Several common documents and records involved in the expenditure cycle are discussed briefly below. The particulars of an EDP system may change the form of these documents or files. For example, the file structure discussed below is a more traditional one. For companies that use a database system, transaction records are stored in a database, and it is important for the auditor to understand the key tables that drive access to information in this system, and how those tables link together. Nevertheless, the following documents and records are found in most accounting systems:

- **Purchase requisition.** Written request for goods or services by an authorized individual or department to the purchasing department.
- **Purchase order.** Written offer from the purchasing department to a vendor or supplier to purchase goods or services specified in the order.
- **Approved vendor master file.** Computer file containing pertinent information on vendors and suppliers that have been approved to purchase services from and make payments to.
- **Open purchase order file.** Computer file of purchase orders submitted to vendors for which the goods or services have not been received.
- **Receiving report.** Report prepared on the receipt of goods showing the kinds and quantities of goods received from vendors.
- **Receiving file.** Computer file with receiving information on quantities of inventory received from vendors.
- **Vendor invoice.** The bill from the vendor stating the items shipped or services rendered, the amount due, the payment terms, and the date billed.
- **Voucher.** An internal form indicating the vendor, the amount due, and payment date for purchases received. It is used to authorize recording and paying a liability. Many purchase systems require a complete voucher packet before approving payment. The voucher packet usually contains a copy of the appropriate purchase requisition, purchase order, receiving report, vendor invoice, and voucher—all the documentation supporting the purchase transaction.
- **Exception reports.** Reports with information about transactions identified for further investigation by computer application controls.
- **Voucher summary.** Report of total vouchers processed in a batch or during a day.
- **Voucher register.** Formal accounting record of recorded liabilities approved for payment.

- **Purchase transactions file.** Computer file containing data for approved vouchers for purchases that have been received. Used to print the voucher register and update the accounts payable, inventory, and general ledger files.
- **Accounts payable master file.** Computer file containing data on approved unpaid vouchers. The file may be organized by vendor. It should sum to the balance in the accounts payable control account.
- **Suspense files.** Computer files that hold transactions that have not been processed because they have been rejected by computer application controls.

FUNCTIONS AND CONTROL ACTIVITIES

The processing of purchase transactions involves the following purchasing functions:

- **Initiating purchases.** The request by an entity for a transaction with another entity, including:
 - Placing vendors on an authorized vendor list
 - Requisitioning goods and services
 - Preparing purchase orders
- **Receipt of goods and services.** The physical receipt or shipment of a product or service, including:
 - Receiving the goods
 - Storing goods received for inventory
 - Returning goods to vendor
- **Recording liabilities** including preparing the payment voucher.

Each of these major functions should be assigned to a different individual or department. This provides classical segregation of duties by segregating authorization of transactions, custody of assets, and recording transactions. With this structure, the work of one employee or department can provide an independent check on the accuracy of the work of another. The functions, applicable control activities, and relevant assertions and related specific audit objectives are explained in the following sections. Figure 15-6 summarizes example control procedures related to each of these functions.

Initiating Purchases

In general, initiating a transaction represents the process of agreeing to a transaction with an independent third party. Many entities separate the following sub-functions for transactions above a specified dollar amount. For smaller transactions a department may have more latitude in requisitioning and ordering goods. When an entity grants greater latitude to a department in initiating transactions, the entity usually attempts to establish strong budget and accountability controls over a department's expenditures.

Placing Vendors on an Authorized Vendor List

The process of approving vendors for the delivery of goods and services is an important control, particularly in accounting systems that rely on computer controls. If management, typically the purchasing department, establishes strong controls over putting authorized vendors on an authorized vendor list, it is difficult for employees to initiate transactions with fictitious vendors.

Figure 15-6 ■ Control Risk Considerations—Purchase Transactions

Function	Potential Misstatement	Computer Control ^a <i>(Manual Controls in Italics)</i>	C1	E01	VA1	PD1
Initiating Purchases	Potential lack of control over purchases and unrecorded liabilities.	Computer generates prenumbered control over requisitions and purchase orders and checks numerical sequence.	P			
	Purchases may be made for unauthorized purposes.	Computer verification of employee authorization code to enter requisition or purchase order.		P		
	Purchases may be made for unauthorized purposes or quantities.	Computer-performed limit test on requisitions and purchase orders. Necessary approvals tied to limit test.		P		
	Employees may create fictitious vendor and bill for services not received.	Computer compares vendor on purchase order to master vendor file. <i>Only a limited number of employees can add a vendor to the master vendor file.</i>		P		
Receiving Goods and Services	Goods may be received but not recorded.	Computer checks for goods ordered and not received within a reasonable period of time.	D			
	Receiving may accept goods that were not ordered or authorized.	Computer checks for a valid purchase order in order to initiate receiving report.		P		
Recording Liabilities	Goods or services may be received, but the appropriate liability may not be recorded.	Computer checks for goods received but not recorded as a liability within a reasonable period of time. In the case of services, the computer checks for services ordered but not recorded as a liability within a reasonable period of time.	D			
	Goods or services may be received, but the appropriate liability may not be recorded.	Computer checks batch totals and run-to-run totals to ensure that all transactions are processed.	D			
	Liabilities may be recorded for goods or services not received or may be recorded at an incorrect amount.	Computer matches voucher information regarding vendor, type of good, quantity of goods, and dollar amount against authorized purchase order and receiving report.		D		
	Submitting the same vendor's invoice twice for payment.	Computer reviews the vendor's invoice field for prior recording of the vendor's invoice number.		P		
		<i>Manual controls require that supporting information is canceled and a voucher cannot be issued without original supporting documents.</i>			P	
	Purchases may be recorded in the wrong accounting period.	Computer compares accounting period in which the voucher is recorded with the accounting period received.	D	D		
	Mathematical misstatements may be made while processing vouchers.	Computer checks the mathematical accuracy of the voucher and supporting documents.			D	
	Purchases may be incorrectly posted or summarized.	Computer compares sum of subsidiary ledger accounts with general ledger control account.			D	
	Purchases may be posted to the wrong accounts.	Computer compares account distribution on the voucher with account distribution on purchase requisition or purchase order.				D

(continues)

Figure 15-6 ■ (Continued)

Function	Potential Misstatement	Computer Control ^a (Manual Controls in <i>Italics</i>)	C1	EO1	VA1	PD1
		Management Control				
	Purchases may be recorded for goods or services not received, they may be posted to the wrong account, or in the wrong amount.	An appropriate level of management reviews all purchases charged to their responsibility center on a timely basis reviewing vendors, amounts, and accounts charged.		D	D	D

^a All computer controls assume that exceptions are either printed on an exception report for followup or an error message appears during input and the transaction cannot be processed without correction and acceptance.

P = potential control to prevent misstatement or unauthorized use of resources.

D = potential control to detect misstatement or unauthorized use of resources.

Requisitioning Goods and Services

The purchase requisition represents the start of the transaction trail of documentary evidence in support of management's assertion as to the existence or occurrence of purchase transactions. Thus, it provides evidence about the specific audit objective (EO1) in Figure 15-2. Purchase requisitions usually are initiated from stores (the warehouse) for inventoried items or any department for items not inventoried. The important control consideration is that all requisitions meet the authorization policy established by the entity. Most companies permit general authorizations for regular operating needs for items included in a department's operating budget. The permitted dollar amount is often tied to the employee's level in the entity. In contrast, company policy frequently requires specific authorizations for capital expenditures and lease contracts. Purchases that are less routine and higher in dollar amount usually require a higher level of authorization than routine and less significant purchases.

Purchase requisition forms may be prepared manually or electronically. The supervisor who has budgetary responsibility for the purchase should approve each request (manually or electronically). In a computerized system a unique, sequentially numbered system should be used in numbering documents regardless of the originating department. Computer-prepared requisition orders should require entry of a valid employee number, which the computer would use to check if the requisition was within the authorization limit set for that employee. The computer would also screen the input fields for errors such as negative numbers, characters in a numeric field, and so on. Rejected data would produce an error report to be dealt with immediately in on-line systems, or to be corrected by the user department and resubmitted if the requisition was valid. A report of missing or out-of-sequence requisitions should be routinely produced, and any exceptions promptly investigated.

Preparing Purchase Orders

The purchasing department should have the authority to issue purchase orders only on the receipt of properly approved purchase requisitions. Preparing the purchase order continues the process of initiating a transaction. The role of purchases is to ascertain the best source of supply and, for major items, to obtain

competitive bids. A computerized system would have an approved master vendor list and current price lists for items normally purchased. The purchase order would be completed with information from these lists.

Purchase orders should contain a precise description of the goods and services desired, quantities, price, and vendor name and address. Purchase orders should be prenumbered and accounted for. Prenumbered purchase orders allow for the ability to follow each transaction from initiation to receipt of goods or services, to recording the purchase, to payment of final consideration (C1), and purchase orders should be signed by an authorized purchasing agent (or authorized individual if purchase orders are generated in a department). The original is sent to the vendor, and copies are distributed internally to the receiving department (usually without quantity information), the accounts payable department, and the department that submitted the requisition. The quantity ordered is generally obliterated on the receiving department copy, so that receiving clerks will make careful counts when the goods are received. Depending on the extent of the computerized system, the only hard copy document generated would be the purchase order that is sent to the vendor. Some companies eliminate this as well by using EDI computer links with their suppliers.

Receipt of Goods and Services

Preparing a Receiving Report

A valid purchase order represents the authorization for the receiving department to accept goods delivered by vendors. The receipt of a good or service usually evidences the completion of a transaction and the establishment of a liability. Receiving department personnel should compare the goods received with the description of the goods on the purchase order, count the goods, and inspect the goods for damage. A prenumbered receiving report should be prepared for each order received to document that goods have been received and that a liability should be established. In computerized systems, the receiving report may be prepared by using information already in the computer and adding the appropriate receiving data such as quantities received. The computer system should compare the quantity ordered to that received and generate an exception report for appropriate followup.

The receiving report is an important document in supporting the existence or occurrence assertion for purchase transactions (EO1). In addition, most companies prepare daily reports of all receivings that have not resulted in vouchers to control the completeness assertion for purchases and accounts payable (C1). The information on the receiving report is forwarded to accounts payable, via a copy of the receiving report or electronically. Receiving reports are rarely prepared for the receipt of services (utility bills, rent, accounting services, etc.). In these cases management usually documents receipt of a service by approving a copy of the vendor's invoice for payment.

Storing Goods Received for Inventory

Upon delivery of goods to stores or other requisitioning departments, receiving clerks should obtain a signed receipt. Obtaining initials on a copy of the receiving report serves this purpose and provides further evidence for the existence or occurrence assertion for the purchase transaction (EO1). The signed receipt also establishes subsequent accountability for the purchased goods. Separating cus-

tody of goods received for inventory from other functions involved in purchasing reduces the risk of unauthorized purchases and the misappropriation of goods. An entity should keep the goods in secure storage with limited access and proper surveillance. Most computerized perpetual inventory systems allow warehouse management to keep track of inventory by specific location in the warehouse.

Recording Liabilities

The receipt of a good or service usually establishes an obligation for an entity to complete a transaction. Accrual accounting requires the recording of a liability. Many companies create a voucher, an internal document, to recognize the liability and record it in the purchases journal or voucher register. Usually, the accounts payable department is responsible for ensuring that purchases are accurately recorded. Many important controls, as seen in Figure 15-6, occur at the time of recording purchases. Controls over the recording of a liability, and the specific audit objectives to which they can relate, include the following:

- Computer prepares a report of all goods received that have not resulted in a voucher (C1).
- Computer agreement of the details of the voucher with the vendors' invoices and the related receiving reports and purchase orders (EO1, VA1).
- Computer comparison of the receiving report date with the accounting period when the voucher is recorded. They should be in the same accounting period (EO1, C1).
- Computer check of the mathematical accuracy of each voucher and supporting vendors' invoices (VA1).
- Computer comparison of run-to-run totals to determine that all vouchers are properly posted and summarized in the accounting records (VA1).
- Computer comparison of the coding of account distributions with the purchase order, indicating the asset or expense accounts to be debited, on the vouchers (PD1).
- The supporting documents should be stamped, perforated, or otherwise canceled to prevent resubmission for duplicate payment (EO1). Making duplicate payments is a significant inherent risk in the expenditure cycle.

Discrepancies should be addressed by responding to error messages at the terminal or through exception reports. The variances should be investigated and corrected on a timely basis.

Information about unpaid vouchers is usually maintained in an unpaid voucher file, or accounts payable subsidiary ledger file, pending their subsequent payment. The computer can regularly compare the balance in the general ledger control account with the sum of the account payable subsidiary ledger. In addition, monthly statements received from vendors can be reconciled with the recorded vendor balances (EO1, C1, VA1).

Finally, management should establish a system of accountability for use of the entity's resources. Department managers should regularly be asked to review the transactions that have been charged to their accounts. These managers should be familiar with the underlying business reasons for the transactions and review such reports to ensure that transactions are valid, are the obligation of the entity, are correctly valued, and should be charged to their accounts. If management has

not established controls over accountability for the use of resources, it is evidence of a weakened control consciousness in the organization, and reduces the likelihood that other controls will function effectively.

ILLUSTRATIVE SYSTEM FOR PURCHASE TRANSACTIONS

A flowchart of an illustrative system for processing purchase transactions is shown in Figure 15-5. This figure summarizes the following information that is important to documenting the auditor's understanding of internal controls: (1) key functions, (2) the documentary audit trail, (3) key reports produced by the system, and (4) the computer programs and files involved in the accounting system. Every copy of every document is not documented in the flowchart, as the auditor needs only an understanding sufficient to plan the audit. The flowchart also shows the path that the transaction follows from initiating the transaction in the general ledger, which supports the financial statements. The auditor should also document important activities or control procedures, which may be accomplished by a brief written summary similar to the one that follows.

illustrative purchases system

The illustrative system of purchase transactions documented in Figure 15-6 initiates the transaction with a purchase requisition. Upon electronic receipt of a purchase requisition, purchase orders are prepared using on-line terminals. The computer checks the vendors against an authorized vendor list and performs a limit test based on the appropriate authorization and prints an exception report to be reviewed by the purchasing department manager. A copy of the purchase order is printed and sent to vendors. Receiving, stores, and accounts payable have access to appropriate open purchase order information on-line.

When goods arrive in the receiving department, receiving authorization is obtained by reference to the open purchase order file. The goods are then counted and inspected, and receiving clerks use their computer terminals to record the goods received, updating both a receiving file and the perpetual inventory. A daily report is produced for followup on (1) the differences between quantities ordered and quantities received and (2) purchase orders over two weeks old that have not been received. Receiving, stores, and accounts payable can access appropriate receiving information.

Processing the transaction continues upon the arrival of the vendor's invoice. Invoices are processed in batches of 25 and batch totals are entered into the computer. An accounts payable clerk enters invoice information, and the computer checks the mathematical accuracy of the invoice and compares the information (item, quantity, and accounting period) against the receiving report.

Vendor and account distribution data are compared with the purchase order. Batches that do not match the batch total cannot be processed, and input must be immediately reviewed. A daily report documents all exceptions, and related transactions are held in a suspense file to be cleared by the accounts payable supervisor. A report of open receiving reports that have not resulted in a voucher is produced weekly and daily during the last days of the month.

The master file update performs a run-to-run check by checking beginning accounts payable, plus new vouchers, which should equal ending accounts payable. The transaction file is used

(continues)

to update the accounts payable and general ledger master files. The total of the subsidiary ledger is also checked against the general ledger control account. A voucher is printed and supporting documents are canceled, attached to the voucher, and filed in accounts payable. As vendor statements are received, they are compared with the accounts payable subsidiary ledger, and followup is initiated for discrepancies.

At the end of every week a report is given to each manager of the purchases that have been charged to his or her account. Managers must review the report for accuracy, initial the report, and return it to the controller's office.

LEARNING CHECK

- 15-8** a. State the functions that apply to purchase transactions.
 b. For each purchasing function, indicate (1) the department that performs the function, and (2) the principal document or record, if any, produced in performing the function.
- 15-9** For each of the following potential misstatements for purchase transactions, indicate a potential control procedure and a possible test of controls:
- Vouchers may not be recorded for goods received.
 - Vouchers may be prepared for goods not ordered or received.
 - Goods may be taken from storage areas.
 - Goods received may not have been ordered.
 - Vouchers are recorded in the wrong accounting period.
 - Vouchers are recorded in the wrong amount.
 - Vouchers are charged to the wrong account.

KEY TERMS

Accounts payable master file, p. 701	Receiving file, p. 700
Approved vendor master file, p. 700	Receiving report, p. 700
Exception reports, p. 700	Recording liabilities, p. 701
Initiating purchases, p. 701	Suspense files, p. 701
Open purchase order file, p. 700	Vendor invoice, p. 700
Purchase order, p. 700	Voucher, p. 700
Purchase requisition, p. 700	Voucher register, p. 700
Purchase transactions file, p. 701	Voucher summary, p. 700
Receipt of goods and services, p. 701	

CONTROL ACTIVITIES—CASH DISBURSEMENT TRANSACTIONS

In this section, we consider the common functions and control activities for cash disbursement transactions.

Audit Decision 7

■ What should be considered in evaluating control activities for cash disbursements transactions?

COMMON DOCUMENTS AND RECORDS

Important documents and records used in processing cash disbursement transactions include the following:

- **Check.** Formal order to a bank to pay the payee the amount indicated on demand.
- **Check summary.** Report of all checks issued in a batch or during a day.
- **Cash disbursements transaction file.** Information on payments by check to vendors and others. Used for posting to the accounts payable and general ledger master files.
- **Cash disbursements journal or check register.** Formal accounting record of check issued to vendors and others.

FUNCTIONS AND CONTROL ACTIVITIES

The **cash disbursements function** is the process by which a company provides consideration for the receipt of goods and services. The cash disbursement function usually involves simultaneously paying the liability and recording the cash disbursement. The functions, applicable control activities, and relevant assertions/specific audit objectives are explained in the following sections. Example control procedures are summarized in Figure 15-7.

Paying the Liability and Recording the Disbursement

Usually, a treasury or cash management function is responsible for determining that unpaid vouchers are processed for payment on their due dates. All payments should be by check. The computer can be programmed to extract the vouchers due on each day from the accounts payable master file, and this report is reviewed to determine which payables should be paid, considering the company's cash position.

Once certain vouchers are identified for payment, the computer matches the check information against supporting information, performs programmed application controls, sets a flag that identifies that the voucher has been paid (to prevent duplicate payment), and the payment is recorded. Checks below a certain dollar amount may be machine signed, with larger checks requiring a manual signature from an authorized individual. Controls over the preparation and signing of the checks and related specific audit objectives include the following:

- Authorized personnel in the treasurer's department should be responsible for signing larger checks (EO2).
- Programmed controls check to determine that each check is matched with a properly approved unpaid voucher and that the name of the payee and the amount on the check agree with the voucher (EO2, VA2).
- Programmed controls cancel voucher number once it has been paid, and review paid voucher file to ensure that a voucher is not paid twice (EO2).
- To reduce the risk of theft or alterations, the department controlling the production of checks should control the mailing of the checks (EO2).
- No check should be made payable to "cash" or "bearer," and no blank checks should be issued (EO2, VA2, PD2).

Figure 15-7 ■ Control Risk Considerations—Cash Disbursement Transactions

Function	Potential Misstatement	Computer Control ^a (Manual Controls in Italics)	C2	E02	VA2	PD2	
Cash Disbursement	A check may not be recorded.	Computer accounts for prenumbered check series.	D				
		The computer compares the total on the check summary with the total vouchers submitted for payment.	P				
		<i>Access to blank check and signature plates is controlled.</i>	P				
	A check may not be recorded promptly.	Computer prints report of checks due but not yet paid.	D				
		Run-to-run totals compare beginning cash, less cash disbursements, with ending cash balance as well as beginning accounts payable less disbursements with ending accounts payable.	D				
	Checks may be issued for unauthorized purchases.	Computer compares check information with purchase order and receiving information or other authorization.			D		
		Computer performs a limit test on large disbursement, and these checks must be manually signed.			P		
	A voucher may be paid twice.	The computer has a field that identifies that a voucher has been paid and the voucher number cannot be reused.			D		
	A check may be issued for the wrong amount.	Computer comparison of check amount with related voucher amount.				D	
	A check may be altered after being signed.	<i>Manual control requires that check signers mail checks.</i>				P	
	Errors may be made in recording the check.	<i>Independent bank reconciliation.</i>				D	
		Computer comparison of information on check summary with related voucher information.			D	D	D
	<i>Independent bank reconciliation.</i>		D	D	D	D	
	Management Control						
Cash disbursements may be made for unauthorized purchases, or they may be made in the wrong amount.	An appropriate level of management monitors cash daily, including the amount of checks written daily, the reasonableness of the amounts, and the amount of debits to accounts payable daily.			D	D		

^a All computer controls assume that exceptions are either printed on an exception report for followup or an error message appears during input and the transaction cannot be processed without correction and acceptance.

P = potential control to prevent misstatement or unauthorized use of resources.

D = potential control to detect misstatement or unauthorized use of resources.

- Prenumbered checks should be used and accounted for (C2).
- Access to blank checks and to signature plates should be limited to authorized personnel (C2).

In manual systems it is important that checks are matched with vouchers and underlying supporting documents, and that the vouchers are canceled to prevent duplicate payment.

The cash disbursements transaction file created when checks are prepared is used to update the accounts payable master file and general ledger accounts. The update program also produces the cash disbursement journal and a general ledger summary that are forwarded to accounting. Controls over cash disbursements include the following:

- Run-to-run totals comparing the beginning balance of the disbursement files plus transactions, with the expected ending balance of updated cash disbursement transaction files and the accounts payable master file.
- An independent check of the agreement of the total of the checks issued (usually reported on a check summary) with a batch total of the vouchers processed for payment (EO2, C2, VA2).
- An independent check by an accounting supervisor of the agreement of the amounts journalized and posted to accounts payable with the check summary received from the treasurer (EO2, C2, VA2).
- Independent bank reconciliations (EO2, C2, VA2).

Disbursement checks generally include a stub, similar to a payroll check stub, which identifies the vendor invoice number and the invoice(s) being paid. A copy of each check should be filed with the supporting voucher in the paid voucher file.

ILLUSTRATIVE SYSTEM FOR CASH DISBURSEMENT TRANSACTIONS

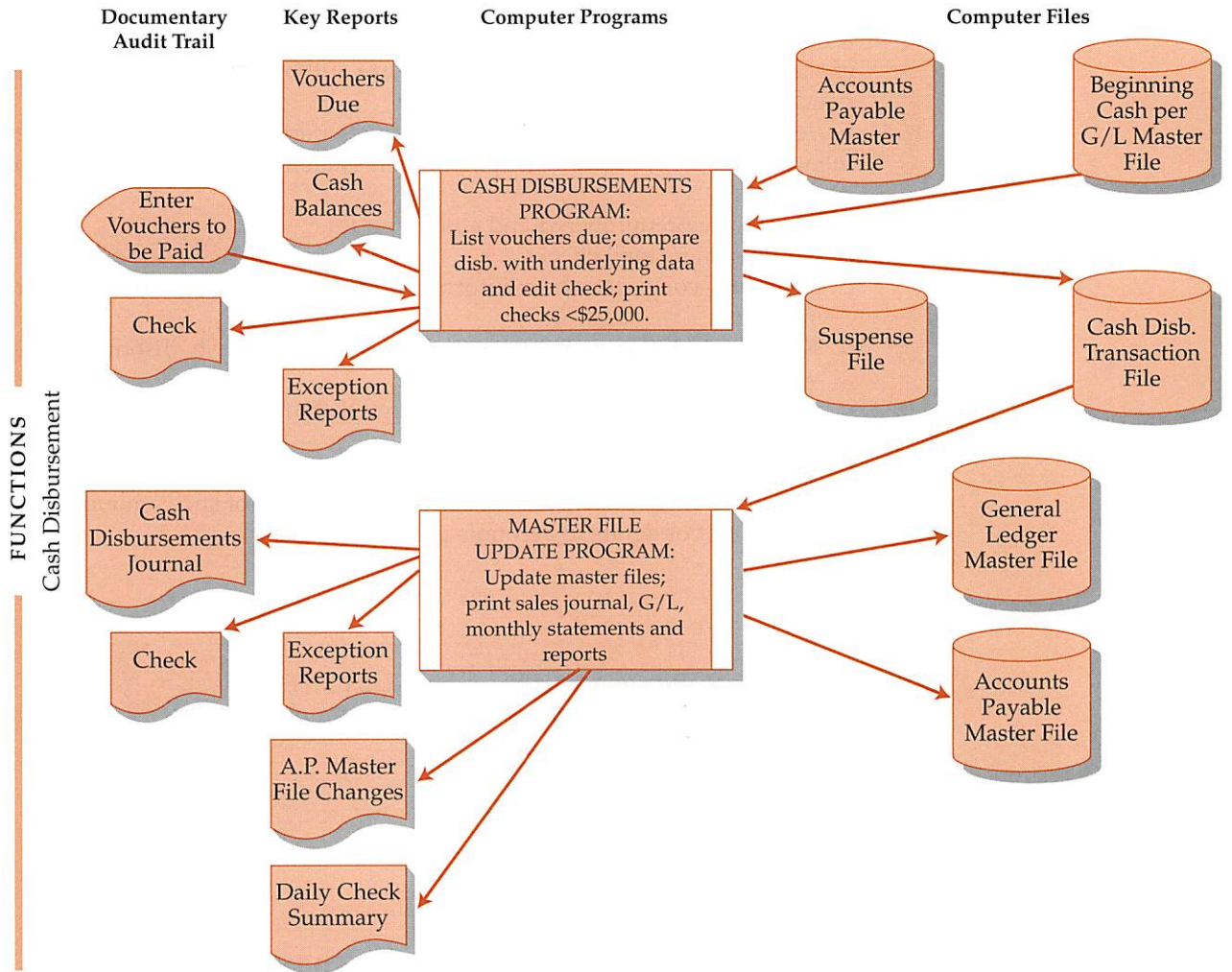
An illustrative system for processing cash disbursement transactions is shown in Figure 15-8. The flowchart continues the path documented in Figure 15-5 that expenditure transactions follow from initiating the transaction, through the consideration process, to the general ledger, which supports the financial statements. Not every copy of every document is documented in the flowchart, as the auditor needs only an understanding sufficient to plan the audit. The auditor should also supplement the flowchart with documentation of important activities or control procedures, which may be accomplished by a brief written summary similar to the one that follows.

The computer runs a daily report of vouchers that are due. The controller reviews the report, evaluates the company's cash position, and determines (and notes on the report) which vouchers should be paid.

An assistant in the controller's office enters the vouchers to be paid, and the cash disbursements program subjects each transaction to programmed controls and prepares prenumbered checks based on the information on the accounts payable master file. Programmed application controls compare the check information with the information on the accounts payable file and

(continues)

Figure 15-8 ■ System Flowchart—Cash Disbursement Transactions



check to see that the voucher has not previously been paid. In addition, the program enters the payment data in a cash disbursements transaction file, performs a run-to-run total, and produces a check summary that is compared with the batch total prepared in accounts payable. Exceptions are put in a suspense file, and a daily exception report is printed for daily review and followup in the controller's office. Disbursements for vouchers in excess of \$25,000 appear on a special report, and these checks must be personally signed by the chief financial officer or controller. The master file update program is then used to update the accounts payable and general ledger master files based on data in the cash disbursements transaction file. This program also produces the cash disbursement journal and a general ledger summary showing the totals posted to general ledger accounts. The daily check summary is compared with the total debits to accounts payable by the controller's office and then checks are mailed. An accountant in the office of the chief financial officer performs independent bank reconciliations.

LEARNING CHECK

- 15-10** Most computer systems simultaneously pay the liability and record the check. Discuss how cash disbursements are authorized and describe independent checks that are appropriate.
- 15-11** For each of the following control procedures pertaining to cash disbursement transactions, indicate the potential misstatement and possible tests of controls.
- Checks are prenumbered and accounted for.
 - Check signers mail checks.
 - Computer compares check information with supporting voucher information.
 - Run-to-run totals compare beginning cash, less cash disbursements, with the ending cash balance.
 - Computer performs a limit test on large disbursements, which must be manually signed.
 - An appropriate level of management monitors cash daily, including the amount of checks written daily, the reasonableness of such amounts, and the amount of debits to accounts payable daily.

KEY TERMS

Cash disbursements function, p. 708	Check, p. 708
Cash disbursements journal or check register, p. 708	Check summary, p. 708
Cash disbursements transaction file, p. 708	

CONTROL ACTIVITIES FOR PURCHASE ADJUSTMENT TRANSACTIONS AND OTHER CONTROLS

Audit Decision 8

■ What should be considered in evaluating control activities for purchase adjustments?

COMMON DOCUMENTS AND RECORDS

Important documents and records used in processing purchase adjustments include the following:

- **Purchase Return Authorization.** Form showing the description, quantity, and other data pertaining to the goods that the vendor has authorized to return. It serves as the basis for initiating the purchase return.
- **Shipping Report.** Report prepared on the shipment of goods to vendors showing the kinds and quantities of goods shipped.
- **Debit Memo.** Form stating the particulars of a debit to accounts payable, including the specific items returned, prices, and amount credited. It provides the basis for recording the purchase return.

Reference is made to each of the above in the following discussion.