

VOLUME 4, CHAPTER 21: “PROCESS COST ACCOUNTING”**SUMMARY OF MAJOR CHANGES**

All changes are denoted by **blue font**.

Substantive revisions are denoted by a * preceding the section, paragraph, table, or figure that includes the revision.

Unless otherwise noted, chapters referenced are contained in this volume.

Hyperlinks are denoted by *bold, italic, blue and underlined font*.

The previous version dated January 1995 is archived.

PARAGRAPH	EXPLANATION OF CHANGE/REVISION	PURPOSE
	Added Table of Contents	Add
Multiple	Remove outdated information, delete citations of specific General Ledger Account Codes, substituting hyperlinks to USSGL and Transaction Library sites.	Update
All	Update references and language throughout to reflect current FASAB and other guidance.	Update
Multiple	Added hyperlinks.	Add

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CHAPTER 21

PROCESS COST ACCOUNTING

2101 GENERAL

*210101. Purpose

The determination as to the need for a formal process cost accounting **capability** in an accounting system is a management decision. The decision to establish such a **capability** should be based upon a recurring need for cost accounting information. The cost accounting standards that shall be implemented when a decision has been made to establish a formal process cost accounting **capability** are in Volume 4, Chapter 19. This chapter discusses how to establish process cost accounting **functionality**, the type of source documents required, typical **cost** management reports produced, and possible uses of these reports. **Component process costing structure must be consistent with the Standard Financial Information Structure (SFIS) and the SFIS Business Rules**

*210102. Overview

A. A formal process cost accounting **functionality** provides a cost identification method for determining, reporting, analyzing, and controlling the cost of a particular process or series of processes. It classifies, records, presents, and interprets in a significant manner the material, labor, travel and overhead expenses necessary to produce a product or service. **Statement of Federal Financial Accounting Standards 4: Managerial Cost Accounting Standards and Concepts** provides the following definition: “a method that accumulates costs by individual processing divisions (organization divisions that perform production processes). These processing divisions are involved in a continuous production flow, with each division contributing towards the completion of the end products. The output of a processing division either becomes the input of the next processing division or becomes a part of the end product.”

B. The management information provided by a process cost accounting **capability** aids management in the guidance of activities and in attaining the objective of producing a maximum of goods and services at the least amount of costs. The formal cost accounting **capability** is normally designed to accumulate those costs that are under the control of local management. Typically the system manager controls all costs that are funded by appropriations for funds provided to the accounting entity. These costs are referred to as funded costs. Chapter 20, paragraph 200311, provides guidance for accumulating unfunded cost. If a formal cost accounting **functionality** is to be used as a basis for billings to other organizations, other Federal Departments or the public, then provisions must be made for the addition of unfunded cost, such as military labor, items obtained from inventory on a free issue basis, and civilian retirement cost not financed by the employee or Department of Defense (DoD) appropriations. Volume 11A Chapter 1 of the FMR provides specific reimbursement guidance for both appropriated fund and WCF activities to use and identifies what cost elements are billed to customers within the DoD Component, to another DoD Component, to another Federal agency, and/or to private party customers.

2102 INTERFACE WITH GENERAL ACCOUNTING SYSTEM

*210201. Formal Process Cost Accounting

Formal process cost accounting [functionality](#) must be fully integrated with other modules of the general accounting system, i.e., it must interface with the payroll and fund control modules. Cost accounting [functionality](#) subsidiary accounts are controlled by general ledger accounts.

*210202. Principal General Ledger Accounts

The principal general ledger control accounts used with process cost accounting are the Inventory – Finished Goods and the Work-in-Process accounts. [Detailed DoD-specific transactions are available in the USSGL Transaction Library](#). Using standardized transactions, post entries reflecting consumption of supplies and labor, followed by entries reallocating expenses to “in-process” accounts.

2103 ESTABLISHING THE PROCESS COST ACCOUNTING CAPABILITY

*210301. Identification of Cost Centers

A. Normally, the first step in establishing the process cost accounting [capability](#) is to request an industrial engineering evaluation of the production processes and flows. This step requires an analysis of the work to be accomplished and a determination of the most logical, efficient, and economical sequence of production and support operations. Production operations are then consolidated into logical cost centers ([a clearly defined responsibility area where costs are incurred](#)) (Volume 1, Chapter 4) to perform specific tasks that produce an identifiable and measurable output. Production operations are designated as direct cost centers and support operations are designated as indirect cost centers. For example, a chemical product may require three distinct operations: blending, distilling, and packaging. The blending of ingredients may be assigned to one production cost center while the distillation process is assigned to another production cost center. Finally, the product packaging is assigned to a third production cost center. As the chemical product is completed, it is transferred from the last production cost center to the customer and the associated cost is posted to the Cost of Goods Sold account.

B. The functions of personnel, recruitment, plant maintenance, and accounting may be grouped into indirect cost centers. Each cost center is assigned an identification number that is subsidiary to the general ledger control account Work in Process-In-House. This identification number is entered on all contracts, inventory item requisitions, and labor distribution source documents to result in the accumulation of cost center incurred costs.

210302. Identification of Product to be Produced

The second step in establishing the process cost accounting capability is to determine the specific products to be produced and the definition of what constitutes output in terms of a product for each cost center. For those products to be produced, an industrial engineer determines the direct labor and material requirements for each stage of the process and identifies the measurable

unit of output for each cost center. For example, chemical products may be measured in terms of the number of gallons blended, distilled, and packaged by the various production cost centers.

210303. Establishing Standard Cost per Unit

A. Frequently there is a third step performed by the industrial engineers - the establishment of a standard cost for output units of production cost centers. The standard cost, when compared to the actual unit production cost, can be used by management to measure the cost efficiency of a cost center or to determine if various inefficiencies have entered into the system. The difference between actual cost and standard cost is termed a variance. Management should investigate both favorable and unfavorable variances to determine their cause. A favorable variance shows that the cost center is operating in an efficient manner. An unfavorable variance alerts management that attention is required. In the event an organization prices products at the standard cost and a variance occurs, the standard cost must be adjusted by the variance in order to recover actual cost. The variance is determined by dividing total actual cost of the cost center by the total standard cost. For example, if cost center A had actual cost of \$20,000, and had produced 1000 items with a standard cost of \$15.00 per unit for a total standard cost of \$15,000, then the variance would be 33.3 percent. This variance indicates the cost center is not operating efficiently. Billings at standard cost would also have to be multiplied by 133.3 percent to recover actual cost (i.e., $\$15.00 \times 133.3\% = \20.00).

* B. A different costing procedure may be followed by Defense Working Capital Fund (DWCF) organizations that use stabilized prices. These organizations may simply accumulate the variances and recover them as part of the following year's standard price. DWCF activities may not change their rates during execution per Volume 2B Chapter 9 except for depot maintenance activities. Prices are established through the budget process and (except for unusual circumstances) remain fixed during the year of execution. This stabilized rate policy serves to protect customers from unforeseen inflationary increases and other cost uncertainties and better assures customers that they will not have to reduce programs to pay for potentially higher-than anticipated prices. In turn, this policy allows activities to execute the budgeted program level and permits a more effective use of Fund resources.

210304. Source Documents Required

The principal categories of cost charged to the production cost centers are direct labor, direct material, contract, and overhead (includes indirect labor and indirect material costs).

* A. Labor Source Documents. Source documents for labor costs are timesheets (manual or electronic). Time cards are coded with the cost center identification number and accumulate the total labor hours worked by employees assigned to the cost center. Hours may be recorded mechanically by a time clock as employees punch in and out daily, or they may be recorded manually by workers or a timekeeper. At the end of each pay period, the civilian payroll system summarizes the hours worked as reported on approved time cards, obtains pay rate data from the personnel system and calculates gross and net pay, based on payroll and withholding authorizations for each employee. A labor distribution report that identifies payroll cost by cost centers based upon the cost center identification number is prepared using the pay computed by the

pay system. This distribution computation may be part of the pay system or it may be included in the cost accounting [function](#). The responsibility for determining who shall perform the labor distribution is a management function.

B. Material Source Documents. There are many source documents that are used to identify material costs. This paragraph discusses some of the more common documents:

* 1. [DD Form 1348, "DoD Single Line Item Requisition System Document \(Manual\)"](#). This form is prepared by the activity requesting material and is coded with the cost center identification number. The form is forwarded to the installation supply officer for approval and to determine the supply availability through the Military Standard Requisitioning and Issue Procedure (MILSTRIP). When the applicable material is issued [from stock to the requisitioning activity](#), it is charged to the account and recorded in the subsidiary account established for the cost center. Chapter 4 provides guidance to be followed in determining the price of material that is released from inventory.

2. Contracts and Purchase Orders (Including Government Purchase Card Transactions). Contracts and purchase orders are another major category of source documents used to purchase material from vendors. When the material or services are received, an accounts payable is established and applicable amounts are entered into the Work in Process-In-House subsidiary account for the cost center. Contract and purchase orders are entered directly into the Work in Process-In-House account rather than into the Inventory Held for Sale account because the materials are purchased expressly for a particular job. Direct application is preferable to commingling the materials with other materials in the Inventory Held for Sale Account.

3. Transfer Tickets. Transfer tickets are used when production units are transferred from one cost center to another cost center. The cost center transferring production units prepares the transfer ticket and the receiving cost center signs for receipt of the material. The transfer ticket contains the number of production units being transferred. A copy of this document is provided to the cost accounting office that records the movement of material.

C. Overhead Source Documents. Overhead costs pertain to the allocation of costs incurred by indirect cost centers to direct/producing cost centers. Various methods for allocating overhead include the direct labor hour basis, direct labor cost basis, machine hour basis, or the material cost basis. The method chosen must be used consistently from one period to the next to permit meaningful comparisons. The direct labor hour basis method for allocating indirect cost center expenses to direct cost centers is illustrated in Figure 21-1:

Figure 21-1 ALLOCATION EXAMPLE

The total indirect expenses for the period are \$48,000 dollars. Cost center A used 1200 direct labor hours, cost center B used 900 direct labor hours, and cost center C used 300 direct labor hours during the period.

FORMULA:

$$\frac{\text{Indirect Expenses}}{\text{Total Direct Labor Hours All Cost Centers}} = \text{Factor}$$

ILLUSTRATION:

$$\frac{\$48,000 \text{ dollars}}{2400 \text{ direct labor hours}} = \$20 \text{ per Hour}$$

Cost Center	Direct Labor Hours		Factor Per Hour		Amount Allocated
A	1200	X	\$20	=	\$24,000
B	900	X	20	=	18,000
C	<u>300</u>	X	20	=	<u>6,000</u>
Totals	<u>2400</u>				<u>\$48,000</u>

Footnote: Material can be added at the beginning of the period, during the period, or during a certain point in the process, e.g., when 50% complete.

210305. Number of Units Produced

A. The number of units still in process (**under production**) within a process cost center is expressed in terms of equivalent production units. The calculation of equivalent production (**weighted average**) inventory is based upon a physical inventory to determine the production status. For example, if the cost center had 100 units that were 75% complete for material and labor, 50 units that were 50% complete for material and labor, and 30 units that were 10% complete for material and labor, the equivalent production units would be 103 ($[100 \times 75\% = 75] + [50 \times 50\% = 25] + [30 \times 10\% = 3]$).

B. The ending inventory of production units are added to the sum of production units transferred out, minus the beginning inventory of equivalent production units to determine the total number of units produced during the accounting period by the department. The calculation is illustrated in Figure 21-2:

Figure 21-2 UNITS PRODUCED EXAMPLE

	NUMBER OF UNITS
Transferred Units	1100
Equivalent Units	<u>103</u>
Sub Total	1203
Less: Beginning Equivalent Units	<u>(100)</u>
Total Production This Month	<u>1103</u>

C. Figure 21-3 illustrates of the use of standard cost to evaluate production efficiency or problems:

Figure 21-3 USE OF STANDARD COSTS

	UNIT COST		NUMBER OF UNITS		COST
Standard Costs					
Labor	\$ 50	x	1103	=	\$ 55150
Material	35	x	1103	=	38605
Overhead	<u>15</u>	x	1103	=	<u>16545</u>
Total Standard Cost	\$100	x	1103	=	<u>\$111300</u>
Actual Costs					
Labor					\$ 60000
Material					35000
Overhead					<u>20000</u>
Total Actual Cost					<u>\$115000</u>
Variance					<u><\$ 3700></u>

*210306. Variance Analysis

Chapter 20, paragraph 200307, provides guidance for various [types of analyses that may be performed](#). Table 20-2 in Chapter 20 provides a chart for identifying possible causes of variances.

*210307. Subsidiary Accounts

Each cost center should maintain the capability to array data in sufficient detail necessary to satisfy management information requirements [and budgeting requirements](#). Cost center subsidiary accounts may be established within individual cost centers in order to cost a product or service. For example, it may be necessary to accumulate direct labor, direct material, [direct travel](#) and overhead in subsidiary accounts. Accounting information is posted to the cost center subsidiary accounts as it becomes available via labor distribution reports, material reports, and overhead worksheets.

2104 MONTH END REPORTS

Month-end production cost reports produced by a process cost accounting system in operation at a Defense Component with three production cost centers is illustrated in Table 21-1. The illustration is presented to clarify the concepts and methodologies previously discussed in this chapter.

Table 21-1 PROCESS COST ACCOUNTING REPORT FOR THE MONTH OF XXXX, 20XX
UNITS PRODUCED

PART A: UNIT PRODUCTION								
	COST CENTER A		COST CENTER B		COST CENTER C		TOTAL UNITS 3/	
Beginning Inventory	100		200		100		100	
Transferred During Month	500		500		500		500	
Units to be Accounted for	600		700		600		600	
Ending Inventory	100		200		100		100	
Production During Month 3/	500		500		500		500	
PART B: COST								
	COST CENTER A		COST CENTER B		COST CENTER C		TOTAL COST	
	STD.	ACT.	STD.	ACT.	STD.	ACT.	STD.	ACT.
Funded Cost:								
Labor	\$ 55150	\$ 60000	\$ 45000	\$ 46000	\$ 30000	\$ 30000	\$ 130150	\$ 136000
Material	38605	35000	40000	38000	15000	16000	93605	89000
Overhead	16545	20000	15000	15000	10000	10000	41545	45000
Subtotal	\$110300	\$115000	\$100000	\$ 99000	\$ 55000	\$ 56000	\$ 265300	\$270000
Unfunded Cost:								
Military Labor	\$ 5100	\$ 5000	\$ 4500	\$ 4700	\$ 2000	\$ 2000	\$ 11600	\$ 11700
Civilian Retire	3800	3600	2500	2400	1500	1500	7800	7500
Free Issue Mat.	4000	4500	2500	2500	1000	1000	7500	8000
Subtotal	\$ 12900	\$ 13100	\$ 9500	\$ 9600	\$ 4500	\$ 4500	\$ 26900	\$ 27200
Subtotal Funded & Unfunded	\$123200	\$128100	\$109500	\$108600	\$ 59500	\$ 60500	\$ 292200	\$ 297200
Depreciation @ 4%	\$ 4928	\$ 5124	\$ 4380	\$ 4344	\$ 2380	\$ 2420	\$ 11688	\$ 11888
TOTAL COST	\$128128	\$133224	\$113880	\$112944	\$ 61880	\$ 62920	\$ 303888	\$ 309088
PART C: FINISHED UNIT STANDARD AND ACTUAL COST								
FUNDED COST 1/							\$ 530.60	\$ 540.00
UNFUNDED COST							53.80	54.40
DEPRECIATION FUNDED AND UNFUNDED							23.38	23.78
TOTAL COST 2/							\$ 607.78	\$ 618.18

* 1/ Funded Unit Standard Cost calculation is Total Funded Cost divided by number of units (i.e. \$265,300 / 500 units = \$530.60)

2/ General and administrative costs are to be added to the sales price when applicable*

3/ Production quantity flows sequentially from Cost Center A to B to C. "Total Units" represents finished goods resulting from Beginning Inventory plus Cost Center C production less finished units transferred out. "Total Units" production repeats the "transferred" quantity.