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Standard Costs -- Their Development and Use

F. Brugger

NATIONAL ASSOCIATION
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COST ACCOUNTANTS

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BUSH TERMINAL BUILDING
130 WEST 42nd STREET, NEW YORK

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PUBLICATION DEPARTMENT NOTE

Mr. F. Brugger, the author of this article, is one of our "inherited" members. That is not a new class of membership but it is one growing out of the merging of the membership of another organization with that of the N. A. C. A. And that is what happened in this case. On February 13, 1923, the Albany Chapter of the Industrial Cost Association was merged with the Albany Chapter of the N. A. C. A. and Mr. Brugger was one of the assets turned over by the Industrial Cost Association. In passing, it may be remarked that we are proud of our inheritance in this instance.

Mr. Brugger began his business career in December, 1903, when he became a clerk in the Payroll and Cost Department of the British-Thomson-Houston Company, Rugby, England. Some sixteen months later he entered the factory to get practical shop experience and worked in the pattern shop, winding department, assembly and test.

Leaving England in the early part of 1907 he came to this country and in March entered the employ as a student in the test of the General Electric Company at the Schenectady Works. A year later he secured a position in the accounting department of the General Electric Company, Pittsfield Works, where he was eventually placed in charge of factory accounts, expense statistics, taking inventories, and shop clerical systems. Since April, 1914, he has been supervisor of costs and has had charge of the cost department at the Pittsfield Works.

STANDARD COSTS—THEIR DEVELOPMENT AND USE

In approaching the subject of standard or pre-determined costs, their development and use, let us first follow the successful business man's procedure in deciding to engage in the manufacture and marketing of a new article.

First, he considers the probable demand, then he estimates or obtains an estimate of the cost of manufacture, the cost of distribution, the amount of fixed investment and working capital necessary and the amount of net income required to make the venture a profitable one. After arriving at a satisfactory selling price in this manner, he again reviews his estimate of demand and if assured of the reasonableness of all these factors, he goes ahead with the enterprise. In other words, estimated or pre-determined costs form the very basis of his decision to risk his reputation and money in the new venture. Naturally, he is very much interested to know as soon as possible to what extent his estimates are met and it is the function of the cost accountant to so arrange the cost system that this information can be furnished as promptly as possible.

Although the illustration given refers to an entirely new business venture, the same line of reasoning is applicable to the every-day decisions of the management in the conduct of any going concern.

In the past the comparison of actual performances with standards was not recognized as being an essential part of a cost system and even today it is disregarded by many cost accountants. The blame for this condition is probably chargeable to the manufacturer more than to his accountant. The cost accountant *per se* is not generally qualified to set standards and there being no demand on the part of the management for cost information stated in comparison with standards, the accountant rather naturally contented himself with providing the customary information as to past happenings without reference to any preconceived idea of what should have been realized.

The "standard" method of cost accounting has been developed to meet the need for more constructive cost information than was provided under the older form.

A standard cost should be figured on the basis of an efficiency attainment reasonably possible in a factory operating at normal capacity.

Standard Material Costs

The quantity of material set for standard is the gross quantity estimated to be required after determining the kind and size of material best adapted for the manufacture of the part. This is ascertained by a study of the conditions under which material can be purchased (with due regard to variations in length, width, and thickness permissible under prevailing trade rules) and by a study of the manufacturing processes so as to determine the unavoidable loss of material incident to the manufacture, such as material lost in cutting, short ends, trimmings, etc.

The price of material set for standard may either be the average market value over a cycle of years or the market value at the date of the annual inventory, if, as I believe it to be advisable, standards are revised at least once a year.

Standard Labor Costs

A standard direct labor cost represents the cost of the standard time required to perform the operation (as determined by careful time and motion studies) as the standard rate per hour, the latter representing, preferably, the going rate in the locality for the particular class of labor involved.

Standard Burden Rates

Standard burden rates are established for each department, production center, or machine group, the method adopted being dependent upon whichever of these is used as the unit for the purpose of controlling the expenses and distributing them to the product. The first step in the establishment of standard burden rates is to estimate the standard productive hour or producing payroll in the fiscal period when the plant is operated at normal,

normal being defined as, for example, 80 per cent capacity. With this figure as the basis, standard allowances are set for all items of expense based on past experience and knowledge of the business. For the sake of control, expenses are grouped by main classes such as indirect labor, expense materials and supplies, power, heat and light, maintenance, depreciation, taxes, insurance and general assessment.

Separate sub-totals are determined for: (1) those expenses that are fixed in amount, irrespective of the volume of business; and (2) those that are expected to vary more or less consistently with the fluctuation of business. The ratio of the standard burden to the productive hours or producing payroll for the department, production center, or machine group, as the case may be, represents its standard burden rate.

Standard Cost Records

The principal records required to operate the standard cost system may conveniently be grouped as follows:

A. Standard cost data.	Standard cost of parts Analysis of standard material and labor Standard burden statement Summary of standard cost of machines
B. Reports on actual performances	Material operation card Labor operation card
C. Statements and analysis for preparation of book entries	Production report Analysis of standard cost of shipments
D. Cost Ledger.	Material inventory control account Material work in process account Labor work in process account Burden work in process account
E. Key statements for Executives	Summarized manufacturing statement Current cost of machines Adjusted cost of sales and profit and loss statement Summarized manufacturing and efficiency statement Departmental efficiency statement

These records are illustrated in charts 1 to 4.

STANDARD COST DATA

CHART 1

STANDARD COST OF PARTS per 100 pcs. Date

Name of part — Part No

Material — Qty | Price | Per | Amt.

Labor by departments

No.	Name of Operation	Mach Shop	Press Dept.	Pl. & Finish	Assmby			Total
1								
2								
etc.								

(A)

To record for each part

@ The kind and size of material and the quantity established as standard required to manufacture 100 pieces, the standard price and standard cost of the material.

(b) The operation in sequence of performance, the standard price set for each by departments and the total labor cost per 100 pieces

ANALYSIS OF STANDARD MATERIAL AND LABOR

Machine — Date — No.

	Part No.	No Reg.	Material: Gi'ron Cast'g's	Steel	Copper	Brass	Alum.		Total	Labor: Mach. Shop	Press Dept.	Plat'g Dept.	Assmby		Total
	101														
	102														
	etc.														

(B)

To collect from Standard Cost of Part records cost of all parts composing one complete machine segregated by main classes of material and labor for each department which with the addition of assembly labor and material will result in the total Standard material and labor cost of the machine

SUMMARY OF STANDARD COST — Date —

Machine: — No.

Description	Amt.	Total
Material		
Gi'ron Castings		
Steel		
etc.		
Total Material		
Labor		
Machine Shop		
Press Dep't		
Plating Dept.		
etc.		
Total Labor		
Burden		
Machine Shop %		
Press Dep't. %		
Plating Dept. %		
etc.		
General Burden %		
Total Burden		
Total Cost		

(D)

To summarize totals obtained from Analysis of Standard Material and Labor add the burden by applying to the Standard labor of each department the Standard percentage established for the purpose of liquidating its burden and so determine the total Standard Cost of a complete machine

STANDARD BURDEN RATE — Dept.

Based on operating at 50% Capacity	Amt.	Total	% to Direct Labor
Indirect Labor			
Supervision			
Clerks			
Helpers & Laborers			
Other Ind. Labor			
Expense Mat'l. Supplies etc.			
Non-durable small tools			
Miscell. Shop Supplies			
Other expenses			
Power Heat & Light			
Maintenance			
Total variable direct burden			
Depreciation			
Taxes			
Property Insurance			
Total fixed direct burden			
Assessment			
Total burden			
Direct Labor			
Date			

(C)

STANDARD COST DATA (See Chart 1)

The forms illustrated in the charts are designed to meet the requirements of a company manufacturing machinery.

A Standard Cost of Parts (Form A) is made out for each part to show:

1. The kind and size of material and the quantity established as standard to manufacture 100-pieces, the standard price and standard cost of the material.
2. The operations in sequence of performance, the standard labor costs thereof analyzed by departments and the total labor cost per 100 pieces.

Analysis of Standard Material and Labor (Form B) is the medium for the collection of the standard labor and material costs of the parts required for the manufacture of a complete machine as obtained from the Standard Cost of Parts record (Form A). On Form B the standard labor costs are analyzed by departments and the material costs by material classes. Standard assembling labor and material costs are added to the standard costs of the parts to obtain the total standard material and labor costs of the machine.

The *Standard Burden Rate Statement* (Form C), illustrates the manner in which the data required for the setting of the standard burden rate for each department or production center may be collected. The form is designed to show the standard allowances for each class of burden and sub-totals for "Variable direct" burden, "Fixed direct" burden and for the assessed charges over which the department head has little or no control.

As has already been pointed out, the standards shown on this statement are based on operating the plant efficiently at normal capacity. This basis is used in order to eliminate from the standard costs the element of burden due to idle equipment.

The *Summary of Standard Cost* (Form D) is designed to summarize the totals obtained from the Analysis of Standard Material and Labor, to add the burden by applying to the standard labor of each department the standard percentage established for the purpose of liquidating its burden and so to determine the total standard cost of a complete machine.

REPORTS ON ACTUAL PERFORMANCE AND ANALYSIS FOR PREPARATION OF BOOK ENTRIES (See Chart 2)

Actual performance in regard to material consumption and labor expended is reported on Labor and Material Operation cards arranged for machine tabulation.

The *Labor Operation Card* (Form E) is designed to show:

1. Earnings of each employee for payroll and efficiency records.
2. Production record of parts.

REPORTS ON ACTUAL PERFORMANCE AND ANALYSIS FOR PREPARATION OF BOOK ENTRIES.
CHART 2

Labor Operation Cards
issued for operations performed, show
- date
- * employee's number
- employee's name
- * department
- * machine group
- machine number
- * class of product
- assembly number
- * part number
- name of part
- operation number
- description of operation
- pieces on order
- * pieces made
- pieces balance
- standard hours per 100 pcs.
- A * standard hours total
- B * actual hours
- standard machine rate per standard hour
- * standard machine rate total
- standard labor per 100 pcs.
- C * standard labor total
- actual labor Day work or Piece work
- actual labor rate per hour
- D * actual labor total

(E)

*Items marked are punched on cards for tabulating machine work

Card is designed to show
1: earnings of each employee for payroll & efficiency records
2: production record of parts
3: standard and actual hours and amounts for each part, class of product and department
4: standard burden earned on standard time for each machine group and department
(E) A-B = amount due to variation in time consumed
(F) C-D = amount due to variation in time consumed and labor rate
(P)-(E) = amount due to variation in labor rates

Material Operation Cards
for the issue of materials, show
- date
- *material account number
- description of material
- *class of product
- *assembly number
- *part number
- name of part
- pieces on order
- pieces made
- pieces balance
- unit of material
- standard quantity per 100 pcs.
- G *standard quantity total
- standard price per unit of material
- *standard quantity at standard price
- H *actual quantity
- *actual quantity at standard price

(F)

Card is designed to show
1: standard and actual quantity and amounts of each class of material consumed for each part and class of product

G-H = amount due to variation in quantity
Material control accounts by main classes show the ratios of standard to actual prices which applied to "actual quantity" give the amount due to variation in price

MONTHLY PRODUCTION REPORT

Dept's — Month of:

Part No.	No of pieces Made	Std Lab Cost per 100 pieces	Std Lab Cost Total	Standard Material Cost Copper per 100 pcs.	Copper Total	Brass per 100 pcs.	Brass Total	Total per 100 pcs.	Total Total

(G)

To summarize for each department monthly the amount of standard labor and the amount of material (segregated by main classes) in the parts produced.

MONTHLY ANALYSIS OF STANDARD COST OF SHIPMENTS

Shipments			Material						Labor					
			Copper				Total		Press Dept.		'		Total	
Mach. No.	Part No.	No. Ship.	Each	Total	Each	Total	Each	Total	Each	Total	Each	Total	Each	Total
Total														
Standard Burden														
% to Direct labor														
Amount														

(H)

General Standard burden %
Total Standard cost of Shipments $

To summarize for each department the amount of material, labor and burden included in shipments

3. Standard and actual hours and amounts for each part, class of product, and department.
4. Standard burden earned on standard time for each machine group and department.

From this information may be calculated the amount of variations from standards due: (1) to variation in the time consumed, and (2) to variations in labor rates.

The *Material Operation Card* (Form F) provides for recording the actual and standard quantities of material consumed. Both of these quantities are extended at the standard material price in order to determine the increase or decrease in cost due to variations from the standard material quantity.

The *Monthly Production Report* (Form G) is made up by departments and shows the production in the month by part numbers (as obtained from the Labor Operation Cards) and the standard labor and material costs of this production obtained by extending the pieces made at the standard labor and burden costs as shown on the Standard Cost of Parts records (Form A—Chart 1).

The *Monthly Analysis of Standard Cost of Shipments* (Form H) shows the number of pieces shipped of each machine or part number, and the standard material and labor costs of these shipments, the former being analyzed by main material classes and the latter by departments. It also shows the standard burden cost of these shipments, also analyzed by departments. The totals obtained from this analysis are used to credit the finished stock account or the work in process account as will be shown later.

Cost Ledger (See Chart 3)

Standard and Actual costs are tied in with the books of account in the following manner:

Productive material is classified by accounts and in such detail that the fluctuations in market prices affect all items in the same class in approximately the same proportion. Invoices covering material and incoming freight, after being checked for correctness, are priced and extended at standard prices and distributed to the proper material classifications. Ledger accounts are maintained for each main class of raw material in the stores (See Form I) with the total represented in the Inventory Control Account. These accounts are charged at "actual" as well as at "standard" cost with the inventory of raw material at the beginning and the purchases during the month. At the close of each month, the totals of the charges in the "actual" and "standard" columns are determined and the ratio of actual to standard charges figured. The material controlling accounts by main classes are credited in the "'standard" column with amounts representing the actual quantities taken from Stores and extended at standard prices, as obtained from summaries of Material Operation Cards, Form F. The actual cost of

COST LEDGER

CHART 3

MATERIAL INVENTORY CONTROL ACCOUNT

Divided into sub-control accounts for main classes of material - example

"Copper" Controlling Account

Dr. Date	Description	Actual	Standard	Ratio	Cr. Date	Description	Actual	Standard	Ratio

Charged with raw material in stores and purchases including incoming freight.

(I)

Credited with actual quantities withdrawn from stores

Difference between actual and standard = price variation.

DIRECT LABOR - CONTROL ACCOUNT

Distributed to "work in process" accounts by departments or production centers - example

Press Department

Dr. Date	Description	Actual	Standard	Ratio	Cr. Date	Description	Actual	Standard	Ratio

Charged from labor operation cards

Standard = production at standard prices

Actual = Actual wages paid for direct labor

(K)

Credited with labor in Shipments

Standard = From analysis of standard cost of shipments

Actual = Standard multiplied by the ratio shown on the debit side of this Acct

Separate "work in process" accounts are maintained for each main class of material (and for each line of product and department)

"Copper" Work in process

Dr. Date	Description	Actual	Standard	Ratio	Cr. Date	Description	Actual	Standard	Ratio

Charged from summaries of material operation cards and raw material control account.

Standard - Std quantities at Std Costs

Actual - Actual quantities at Act Costs

(J)

Credited with copper in Shipts.

Standard = From analysis of standard cost of Shipments

Actual = standard multiplied by the ratio shown on the debit side of this account.

BURDEN - CONTROL ACCOUNT

Distributed to "work in process" accounts by departments or production centers - example

Press Department

Dr. Date	Description	Actual	Standard	Ratio	Cr. Date	Description	Actual	Standard	Ratio

Charged with

Standard - Standard rates applied to Standard time or direct labor

Actual = From sub-ledger showing charges by classification of burden

(L)

Credited with "Burden" in Shipments

Standard = From analysis of Standard cost of Shipments

Actual = Standard multiplied by the ratio shown on the debit side of this Acct

the material withdrawn from stores is obtained by applying to its standard value the ratio of actual to standard shown on the debit side of the account. The accounts are then closed and the balances brought forward as representing the inventories at the beginning of the following month. The accounts deal with values only and are supplemented by stores records showing quantities for each size and kind of material and all other information required for the proper maintenance and control of materials. Stores records do not show values.

Material Work in Process Accounts (Form J) are also kept for each main class of material. They are charged with the inventories or balances of the accounts at the beginning of the month, the actual cost of material withdrawals during the month as shown on the credit side of the corresponding raw material control accounts and the standard costs of the material in the product as obtained from summaries of Material Operation Cards, Form F. It will be noted that the differences between the standard and actual amounts credited to Raw Material Control Accounts represent variations in prices, whereas the differences between the standard and the actual amounts charged to the Work in Process accounts cover variations in quantities as well as prices. Material Work in Process accounts are credited in the "standard" column with the amount of standard material in shipments as obtained from the Monthly Analysis of Standard Cost of Shipments (Form H—Chart 2). They are credited in the "actual" column with amounts determined by applying to the standard value the ratio of actual to standard amount shown on the debit side of the accounts.

Direct Labor Control Accounts (Form K) and *Burden Control Accounts* (Form L) are maintained for each department or production center and handled similarly to the Material Work in Process accounts.

The Direct Labor Control accounts derive their charges from summaries of Labor Operation Cards, Form E. The Burden Control Accounts are charged in the "actual" column with the actual burden as determined from the burden ledger records and in the "standard" column with amounts calculated by applying the standard burden rates to the standard hours or amounts shown on the summaries of Labor Operation Cards, Form E. Credits to these accounts are determined from the Monthly Analysis of Standard Cost of Shipments, Form H, and ratios on the debit side of the respective accounts in precisely the same way as described in connection with the operation of the Material Work in Process accounts.

Key Statements for Executives (See Chart 4)

To indicate the character of periodic statements which under the standard cost system can be prepared for the executives for the purpose of control, a few sample forms are submitted.

The *Summarized Manufacturing Statement* (Form M) shows for each main class of material, for each department's direct labor

KEY STATEMENTS FOR EXECUTIVES

CHART 4

SUMMARIZED MANUFACTURING STATEMENT

Month of—

	This Month			Increases or Decr's.		
	Ratio	Actual	Stand	This Mo	last Mo	last Yr.
Material						
Grey Iron Castgs.						
Steel						
etc-etc.						
Total Material						
Labor						
Machine Shop						
Press Dep't						
Plating Dep't						
etc-etc						
Total Labor						
Burden						
Machine Shop						
Press Dep't.						
Plating Dep't						
etc-etc.						
General Burden						
Total Burden						
Total Cost						

* Increases in Red

Current costs of individual machines can be computed in similar form

ADJUSTED COST OF SALES AND PROFIT & LOSS STAMNT.

Month of---

	Std. Cost of Shipts	Ratio Actual to Std.	Adjusted Cost on Basis
Material			
Grey Iron Castings			
Steel			
etc-etc.			
Total Material			
Labor			
Machine Shop			
Press Dep't			
Plating Dep't.			
etc-etc.-			
Total Labor			
Burden			
Machine Shop			
Press Dep't.			
Plating Dep't			
etc-etc			
General Burden			
Total Burden			
Total Cost			
Amount Billed			
Gross Profit			
Selling & Administrative Exp			
Net Profit			

SUMMARIZED MANUFACTURING AND EFFICIENCY STATEMENT

Month of---

	Std. Cost	Incr. or Decr Qty. or Time	Incr. or Decr Prices or Rates	Actual Cost	Ratio Actual to Std This Month	Ratio Actual to Std Last Month	Ratio Actual to Std Last Year
Material							
Grey Iron Castings							
Steel							
etc-etc							
Total Material							
Labor							
Machine Shop							
Press Dep't							
Plating Dep't							
etc etc							
Total Labor							
Burden							
Machine Shop							
Press Dep't							
Plating Dep't							
etc-etc.							
Total Prod Dep'ts Burden							
Burden - General							
Management							
Production Dep't							
Accounting-Cost-Pay Roll							
etc-etc.							
Total General Burden							
Total Cost							
Variation in fixed burden due to idle equipment							

* Increase in red.

Departmental efficiency statements are prepared along similar lines showing for each department in somewhat greater detail, particularly in regard to burden, the items over which the department has control to a major degree. General Burden is omitted from departmental statements but each non productive department is furnished with a statement showing comparison between the actual and standard cost of its operation.

and burden and for the general burden, the actual and standard cost, the ratio of the actual to standard, the increases or decreases over standard this month, last month and last year.

Current costs of individual machines can be compiled on a similar form.

The *Adjusted Cost of Sales and Profit and Loss Statement* (Form N) shows for each main class of material and for each department's labor and burden, the standard cost of shipments, the ratio of actual to standard costs and the adjusted cost of shipments which deducted from the amount billed gives the gross profits. Deducting the selling and administrative expenses from the latter gives the net profit for the month.

The *Summarized Manufacturing and Efficiency Statement* (Form O) differs from the Summarized Manufacturing Statement (Form M) in that columns are added to the former to show the reasons for the increase or decrease in cost; i. e., whether the increase or decrease is due: (1) to quantity of material consumed or time taken; or (2) to changes in prices or rates of wages. It also separates burden into direct departmental burden and general burden and indicates the amount of fixed burden applicable to idle equipment.

Efficiency statements may be prepared along similar lines for each of the departments. Such statements might show labor segregated by machine groups and burden by main groups or even individual accounts. Departmental statements would show only items over which the department has control to a major degree. General burden would be omitted from such statements but the non-productive departments would be furnished with special statements showing comparisons of the actual and standard cost of the operation of their respective departments.

The number of statements required and the degree of details given therein depend, of course, on their practical value to the executives and the use made of them after they are compiled. As an indication of the refinements of information which could be furnished, if desired, it may be stated that it is perfectly possible to determine for each department or production center and for each class of product or even for each individual article:

1. Variations in fixed charges due to fluctuations in production caused by:
   a. Idle time
   b. Efficiency of operators
2. Variations in direct and indirect labor cost due to:
   a. Rates of wages
   b. Efficiency of operators
   c. Extra pay for overtime
3. Variations in Stores and Supplies due to:
   a. Price
   b. Consumption

4. Variations in power cost due to:
   a. Cost of producing power or price of purchased power
   b. Efficiency in use

Uses and Limitations of Standard Costs

The operation of a system of standard costs for a manufacturing plant having been described in some detail, it will be interesting to consider briefly the uses and limitations of standard costs in general. The logical procedure to follow in this connection would seem to be, first, to define the requirements of an efficient cost system, and second, to consider the system which has been described in relation to these requirements.

As the writer sees it the six prime requirements of an efficient cost system are as follows:

1. That it furnish actual current cost of sales, amount of sales billed and resulting profit for each product and class of product.
2. That it provide a means of ready conversion of existing to estimated future costs under current market conditions.
3. That it is adaptable to a ready analytical study of the detailed elements of cost..
4. That efficiency data are easily available.
5. That promptness in furnishing information is secured.
6. That its cost of operation must be consistent with benefits derived therefrom.

Whether or not accurate actual current costs can be prepared promptly and economically under the standard cost system depends, in the writer's judgment, upon the character of production and the nature of the product.

The standard cost plan seems best adapted for use in a plant manufacturing a rather limited number of standard articles in very large quantities requiring very few main classes of material. As the articles manufactured increase in number, as articles of special design for specific customers' requirements are introduced, and as the number of classified accounts for materials is increased, the standard cost system becomes less attractive from the standpoint of economy. This will be appreciated if it is remembered that each material control account can only contain such kinds and sizes of material as are affected by changes in market conditions to the same degree in relation to the standard price provided the plant manufactures more than one article using different kinds and sizes of materials or using the same kind and sizes of materials but in different relationships in regard to quantities. Furthermore, the accuracy and uniformity of the standards set become more and more important as the number of articles increases, because the final step in arriving at the so-called "actual" cost is the sum of a theoretical cost plus a pro-rating of the aggregate of variations in costs over the aggregate of the standard costs. If a plant

manufacturing partly standard product in relatively large quantities and a considerable number of special articles in small quantities should adopt the standard cost system, the costs compiled are likely to be over-stated for the standard and under-stated for the special product. This is so because it may be safely assumed that the standards established for the standard product are more accurate than those for the special articles in connection with which less experience and data are available and for which time studies cannot be carried out to the same degree as for standard production in large quantities and also because special articles generally cost considerably more than we think they should.

Conversion of standard costs to estimated future costs under current market conditions can be effected readily and safely provided actual costs are not too far apart from the standard costs. Altho standards set may or may not agree with actual past experience at the time they are established, care must be taken that standards are practical and attainable under normal manufacturing conditions, and that pressure brought to bear on the standard-setting and on the manufacturing departments, by the designer or even by the management in order to obtain a favorable cost, does not result in the promotion of the manufacture of one article to the detriment of all other articles. Large differences between standard and actual cost cast doubt on the accuracy of the standards and consequently there should be no hesitancy in changing standards as soon as investigation shows that revision is necessary.

Analytical study of the detailed elements of cost is the very basis of a standard cost system. Consequently, the standard cost data are compiled in such a manner as to be of real value to executives, engineers, and designers in their endeavor to detect high spots and to introduce economies. Standard cost data, furthermore, are a useful tool for the operation of an efficient production system and form an excellent basis for efficiency reports.

It is one of the most important functions of a cost system to furnish the management with means of control. While some efficiency statistics can be prepared under practically any cost plan, the standard cost system is the only one under which it is possible to present to the executives each month for the previous month's operations a summarized comparison between actual performance and expectation which will show the difference classified by causes of the variations from standard. Under other cost systems, comparisons between actual and estimated costs can be and are prepared and summarized monthly—usually at the time of the completion of orders—but instead of presenting a statement reflecting the operating conditions and efficiencies of the various departments, we have only a summarized list of differences between estimated and actual costs with detailed explanations in aggravated cases and the results of operations over an indefinite period. In many instances, inefficiencies disclosed by such detailed statements occur months before they come to notice so that the value of a discussion of the particular items is rather limited and at its

best the management is considering only the result of individual transactions instead of figures representing a composite picture of all transactions.

A further advantage of the standard cost system is that the standards, although subject to revision as conditions require, are uniform in principle for all time. As a result, the percentages of variation from standards as shown on the statements are truly comparable for different periods. This is much to be preferred to statements comparing merely actual costs obtained during different periods without indicating the degree of efficiency with which the manufacturing operations were carried on during the periods under consideration. It might be well, however, to mention at this point that standard cost data do not take the place of departmental burden budgets for varying volumes of business as a measure of control, because standards are set on the basis of normal capacity operation which is not attainable at all times. It is true that the variation statement shows the amount due to idle equipment, but it does not provide for comparison of actual performance with what should have been accomplished under existing production conditions.

In conclusion, it may be stated that no one system will fit all kinds of industries and operating conditions. To make a definite statement as to the exact circumstances under which the standard cost system could or could not be operated economically is a task which the writer does not feel competent to undertake. However, he is convinced that the standard cost system is sound in principle and worthy of careful study by all who earnestly endeavor to increase the value of cost accounting to the business world.

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