



Procedures and Technique for Accounting of Costs Associated with Oil Refining

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Abstract

The aim of any operating enterprise is to make a profit in the long run. On the other hand, profit can only be made when hard work, constant research, and the use of available resources are optimally organized. Therefore, the prime-cost of the product and the profit obtained from its sales are crucially important for the manufacturing enterprise. The equipment and technologies used in production, the level of employees and workers, the chemical composition and physical properties of extracted oil condensate, production technology, as well as the climate and land composition of the area play a decisive role in determining the composition of costs associated with oil refining. These peculiarities cause the problem for industry-based enterprises as formation of accounting policies in this industry differs from accounting policies applied in other industries.

Keywords: *Procedures and Technique; Accounting of Costs Associated; Oil Refining*

Aim and objectives

The main aim of this article is to develop proposals and recommendations, which are of prime concern under modern conditions, on the organization of technique for accounting of costs and determining the prime-cost of production in reliance upon the specifics of the oil refining industry.

To achieve the aim set, the following objectives have been identified:

- Study of the peculiarities of the production process and the prime-cost composition of the oil refining industry;
- Theoretical research of the place of origin of costs in the oil refining industry, their economic role in the production process and the volume of production, as well as classification in relation to their economic content;
- Developing recommendations based on the peculiarities of the industry in the grouping of primary costs incurred in the production process;
- Taking into consideration the importance of initial calculation of costs, making proposals on the use of the chart of accounts and some working accounts, which are supplementary to the primary accounts.

Research Methodology

Such research methods as system approach, comparative analysis, grouping, and comparison have been widely used in this paper.

Analysis and Results of the Research

The oil refining industry represents complex technological processes, a high degree of mechanization of production lines, which include various types of products from raw materials to any unit of finished product. Many types of liquid fuel are produced from oil, in particular, fuel oil, gasoline, bitumen, kerosene, lubricants, diesel fuel and various types of oils (technical, medical, household), raw materials for the chemical industry (benzene, paraffin, alcohol, petroleum gases) and etc. From the statements, specified above, it is obvious, that the products manufactured in the industry are like a cell, which unites and consolidates the national economy.

The following factors make a significant impact on the dynamics of costs of oil refineries: improving preparation of raw materials for refining, accurate choice of catalysts, rational use of supplementary materials, reducing energy expenditures. These indicators show that the materials and energy resources consumed have a large share in the prime-cost of the product. Expenditures on oil production, technological purposes and supplementary materials constitute the largest part of the production prime-cost.

Refined petroleum products are divided into primary and secondary products. In addition, semi-finished products, either produced in-house or purchased from outside, are widely used in the process of oil refining. Semi-finished products are used to blend or weaken some products or to get new ones. [10]

Above we have considered the composition of costs and now we are going to study the items of production costs. In compliance with the Regulation of the Cabinet of Ministers of the Republic of Uzbekistan №54 “On the composition of production costs and costs for sale of goods (works, services) and the procedure of formation of financial results” dated February 5, 1999, the industry-based costs can be grouped as follows: [1]

- Raw materials, consumables and services of a production character, which are rendered from outside;
- Salary of workers engaged in production process;
- Social insurance deductions for workers engaged in production process;
- Costs on equipment operating and maintenance;
- Manufacturing overhead costs;
- Failure in production process;
- Entities, which provide services.

Under such a classification of costs, definitely, it is possible to witness what is spent on the product and interrelation of certain elements of costs in the amount of overall costs.

When costs are classified according to their impact on production, they are divided into semi-fixed costs. As it has been mentioned above, an increase in the volume of products extracted results in a

growth of some types of fixed costs. Hence their relative portion in some types of production costs is calculated. The relative portion of semi-fixed costs in some elements of production costs is true only when the accuracy of reliable calculations takes into account changes in variable costs occurred with the launch of new deposits, as well as implementation of organizational and technical measures that cause an increase or decrease in semi-fixed costs. [9]

Hence, the following formula can be used to determine the relative portion of semi-fixed costs:

$$SF = R - (P - p) / P$$

here:

SF - semi-fixed costs;

R - relative portion of semi-fixed costs in the element of this cost, excluding the growth rate of production costs and semi-fixed costs;

P - growth rate of production volume in the current period relative to the growth rate in the base period;

p - growth rate of semi-fixed costs associated with the growth of production volume.

We have mentioned above the savings of semi-fixed cost associated with oil extraction growth. This is determined according to the following formula:

$$CS = CB * P / 100$$

here:

CS – saving of semi-fixed costs;

CB – amount of semi-fixed costs in the prime-cost of goods produced within the base year;

P - growth rate of production volume in the current period relative to the growth rate in the base period.

Moreover, it is possible to calculate savings of semi-fixed costs separately for production workshops, job sites and departments.

The following formula is used to calculate the savings of amortization expenses occurred as a result of the efficient use of production funds:

$$AS = (AB / PB - AC / PC) * PC$$

here:

AS - amortization saving;

AB and AC – amortization expenses for a base year and a current year correspondingly;

PB and PC – monetary value of the volume of production output manufactured in the base year and the current year correspondingly.[8]

The primary peculiarities of cost accounting in the oil refining industry are determined in reliance upon the nature of oil production and refining, its organization and production technology. To be more precise, these peculiarities are the following:

- Organizational structure of production and continuous technological process of crude oil extraction;
- Storage and operation of technological equipment (thermochemical, electric dehydration and desalination, complex oil preparation and stabilization devices) and other technological equipment used in oil production and stabilization, the amount of natural losses in oil production;
- Separation (separation of gas from the raw product, purification, drying to obtain the stability of dry gas and gas condensate);
- Costs associated with reliable and stable supply of consumers with petroleum products of the specified quality and in compliance with the required standards.

Special accounting registers are used to summarize the costs added to the prime-cost of the product. However, now we are acquainted with the accounts on which the initial accounting of costs is implemented. [7]

Naturally, all direct costs are instantly reflected in the debit of account 2010 "Main production" and credit of accounts 1010 "Raw materials and consumables" (if materials are used directly to manufacture the product), 6710 "Payroll settlements with employees" (wages accrued to workers engaged in production), 6510 "Payments on insurance". Indirect costs are reflected in the clearing account 2510 "Production overhead costs". Account 2510 "Production overhead costs" is comprised of maintenance and operating costs of machinery and equipment involved in production, amortization expenses and repair costs for these machinery, as well as its insurance, lighting, heating and maintenance costs of production facilities, wages of the workers servicing the production and other costs. Account 9400 "Recurrent costs" reflects the administrative costs of the enterprise, wages of workers, whose activities are not related to the production process, amortization expenses and repair costs of property, plant and equipment used in management and business activities, consulting, information and audit services, as well as other costs.[6]

At the end of the reporting month, the costs accounted, are distributed in account 2310 "Auxiliary production". According to the method adopted by the company, these costs are allocated to the accounts 2010 "Main production", 2510 "Production overhead costs", 9400 "Recurrent costs" and other accounts according to their functions. The costs, which are then credited to the clearing accounts, are distributed to work-in-progress and commodity product residuals, and then the costs are distributed by product type. Thus, clearing accounts are closed. Costs by product types and cost items are made in the analytical accounts in relation to account 2010 "Main production".

It is known that finished products that do not meet the established standards or technical requirements for their quality may be manufactured in many production processes. Account 2619 "Defective products in production" is applied to account for expenses on a defective product and to determine the losses occurred due to this defective product. The debit of this account reflects the cost of the defective product and the cost of repairing the defective product, while the credit reflects the cost of waste, the culprits of the defective product and the amount of losses occurred due to the defect. Expenditures on the development and preparation of new oil wells are accounted for in account 3100 "Deferred expenses".

Such data as the amount of product, which processing hasn't been completed, place of their origin, as well as the level of readiness of operational accounting and book-keeping are used in evaluating the residuals of work-in-progress at the end of the month. After that, standardized materials and wages for the technological processes that have passed are collected. Then their prime-cost is increased at the expense of indirect costs. The result is the occurrence of the production prime-cost of the residuals of the work-in-progress. This represents the balance at the beginning and end of the month of account 2010 "Main production". The prime-cost of goods produced is determined as follows: the amount of costs incurred during the month is added to the work-in-process at the beginning of the month and the amount of work-in-progress at the end of the month is deducted.[5]

It can be seen that determining the initial cost is crucially important in the process of calculating the prime-cost of a product and making it reliable. On the basis of primary documents on material consumption, labour calculation and distribution costs, amortization expenses, costs are grouped by production workshop, product type and cost items, and appropriate accounting entries are made to reflect the costs.

In addition, company shall keep a separate expense card by account 2710 "Entities providing services". It reflects the costs incurred during the month for each entity, which produces goods and

provides services. There are separate sub-accounts for each of these entities, and all costs are accounted for on these accounts.

Under conditions of the market economy any enterprise, engaged in any economic activity, whether it is manufacturing or non-manufacturing, must demonstrate its costs. Therefore, organization of the initial cost accounting in the enterprise, its reliability and objectivity, definitely make an impact on the final results of financial and economic activities of the enterprise. This is due to the fact that the costs that occur at the lowest and most important point of any production, i.e., during the production process, constitute the primary costs. Documenting the initial costs, which are considered the first link in the chain for determining prime-cost, ensures that the entire chain circulates correctly or incorrectly. In order to account for and control production costs, it is required to implement some structural work in the enterprise and it will enable to achieve the desired goal. That is, specific structural subdivisions are determined and launched in the enterprise. It should be noted, that the amount of costs, the level of responsibility for these costs and the interest of the subdivision in keeping its expenses low are determined for such subdivisions. That's why costs are now taken into account at the place of costs origin, cost bearers, cost centers and responsibility centers.[3]

As it has been mentioned above, when costs are distributed according to the volume of production, they are divided into semi-variable and semi-fixed costs. Hence, semi-variable costs include costs that vary depending on changes in production volume. This, in turn, can be divided into direct semi-variable (raw materials and consumables, wages of workers engaged in production, etc.) and indirect semi-variable costs (equipment operating costs, expenses on movement of goods within the plant, depreciation of the entity's inventory and equipment). Semi-fixed costs were available regardless of production volume.

Direct semi-variable costs are accounted for in accounts 2010 "Main production", 2310 "Auxiliary production" and 2710 "Entities providing services"; indirect semi-variable costs are primarily accounted for in accounts 2500 "Production overhead costs, and then in account 2010 "Main production" and account 2310 "Auxiliary production". Semi-fixed costs are accounted for in account 9400 "Reccurent costs". At the end of the reporting period the costs are remitted from account 9400 "Reccurent costs" in account 9910 "Final financial result". The grouping and accounting of production costs in accounts 2010 "Main production", 2310 "Auxiliary production", 2710 "Entities providing services" reflects the prime-cost of production. For sure, an entity's accounting policy clearly states how it uses the method of calculating the prime-cost of the product, i.e., whether it uses full or incomplete method.[2]

It should be noted, that whether to use or not to use account "Production of goods (works, services)" should be determined in the process of formation of the accounting policy of the enterprise. This account is used to determine the deviation of the actual prime-cost of the finished product from the normative or scheduled prime-cost. The application of this account saves the efforts required to determine how much the actual prime-cost of the finished product left and sold deviates from the scheduled prime-cost. The debit of this account demonstrates the actual prime-cost, and the credit demonstrates the normative or scheduled prime-cost.[4]

Actual prime-cost is transferred from the credit of account 2010 "Main production" to the debit of the account "Production of goods (works, services)". The normative or scheduled prime-cost is reflected in the credit of the account "Production of goods (works, services)" and in the debit of the account 2800 "Finished goods". For this reason, we offer to use account 3700 "Production of goods (works, services)" in the considered industry and apply it in our accounting policy. For production costs to be reliable, costs must be transferred to the prime-cost of the product in the reporting period to which they relate, regardless of whether they are actually paid or calculated. That's why there is a concept of deferred expenses in accounting. The information about these costs is recorded in the asset of account 3100 "Deferred expenses". This includes the costs that occurred during this reporting period but will be recovered in

subsequent periods. A distinctive feature of the debit of account 3100 “Deferred expenses” is that it is impossible to reflect these expenses in the expense account of the current reporting period. With the relevant reporting period comes, it will be partially closed by crediting the account 3100 “Deferred expenses”: [2]

Debit 2010 “Main production”, 2310 “Auxiliary production”, 2510 “Production overhead costs”
Credit 3100 “Deferred expenses”.

The next step is to calculate the actual prime-cost of the product manufactured with the account of production costs. Data on the actual prime-cost are widely used to determine the ways to manage production, identify reserves, and reduce labour and material costs to comply with the scheduled prime-cost of production and control the profitability of production.

Enterprises use several types of calculation of prime-cost of products in the product prime-cost management system. The scheduled, normative and actual prime-cost serves as a determining factor in the planning, accounting and analysis of the prime-cost of certain types of products.

The scheduled prime-cost is developed for the reporting period on the basis of progressive norms and economic standards and reflects the marginal production costs of the enterprise by type of product.

The actual prime-cost is determined on the basis of accounting data at the end of the reporting period and provides reliable information about the actual expenses made on production. It serves as a basis for economic analysis, planning and short-term or long-term decisions on product development, improvement or replacement of this product.

Conclusion and Proposals

We know that in determining the selling price of a product in conditions of economic liberalization, the prime-cost of production is the main factor after market demand for the product. Prime-cost is the consolidation of the costs incurred to manufacture a product. The accurate determination of the prime-cost of oil and petroleum products, which constitute a particularly delicate and long-lasting technological process, is crucially important both in the social life of the population and in the national state economy.

Calculating the prime-cost of a unit of the product is the final step in the calculation process. In this regard, the objects of calculation of the prime-cost of the product and the units of calculation are shown separately.

As a result of our research we have developed the following recommendations:

1. The primary calculation of the initial costs incurred in the production process is important. The reason is that the initial, i.e. analytical calculation of costs in the production prime-cost calculation chain represents the links of this chain. For this reason, the use of analytical accounts by some accounts has been proposed as well.
2. It is proposed to use the account 3700 “Production of goods (works, services)” for accurate determining prime-costs of the production manufactured within the industry considered and correct account of the places of origin of these costs, as well as to reflect them in the accounting policy.

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