

University of Mississippi

eGrove

---

Publications of Accounting Associations,  
Societies, and Institutes

Accounting Archive

---

6-15-1925

## Costs for Oil Producers

R. W. Cobb

Follow this and additional works at: [https://egrove.olemiss.edu/acct\\_inst](https://egrove.olemiss.edu/acct_inst)



Part of the [Accounting Commons](#)

---

**NATIONAL ASSOCIATION  
of  
COST ACCOUNTANTS**

Affiliated with The Canadian Society  
of Cost Accountants



**Official Publications**

---

Vol. VI

June 15, 1925

No. 20

---

**Costs for Oil Producers**

**BUSH TERMINAL BUILDING  
130 WEST 42nd STREET, NEW YORK**

**THE PROPERTY OF  
HASKINS & SELLS  
67 BROAD STREET  
NEW YORK**

# NATIONAL ASSOCIATION OF COST ACCOUNTANTS

**Affiliated with The Canadian Society of Cost Accountants**

---

**Official Publications**

---

**Vol. VI, No. 20**

**June 15, 1925**

**Costs for Oil Producers**

---

**R. W. COBB,  
Ernst & Ernst  
San Antonio, Texas**

---

**BUSH TERMINAL BUILDING  
130 WEST 42nd STREET, NEW YORK CITY**

The National Association of Cost Accountants does not stand sponsor for views expressed by the writers of articles issued as Publications. The object of the Official Publications of the Association is to place before the members ideas which it is hoped may prove interesting and suggestive. The articles will cover a wide range of subjects and present many different viewpoints. It is not intended that they shall reflect the particular ideas of any individual or group. Constructive comments on any of the Publications will be welcome.



Additional copies of this Publication may be obtained from the office of the Secretary. The price to members is twenty-five cents per copy and to non-members seventy-five cents per copy.



COPYRIGHTED BY  
NATIONAL ASSOCIATION OF  
COST ACCOUNTANTS

JUNE 15, 1925

# National Association of Cost Accountants

---

---

## PUBLICATION DEPARTMENT NOTE

Several inquiries have recently been made of the Association on the subject of oil production costs. While the Official Publications are not designed to give exhaustive treatment of accounting methods and problems in highly technical fields, effort is made always to present such material as will give a brief survey of the subject and an appreciation of its main features.

We are glad, therefore, to present this monograph by a man who has met the problems in a practical way. Mr. R. W. Cobb, the author, after being graduated from the Manual Training and Technical School of Indianapolis, completed the accounting course offered by the Walton School of Commerce. He has had twelve years' experience in general and cost accounting, has been a staff accountant with Peat, Marwick, Mitchell and is now located at the San Antonio office of Ernst and Ernst. He is a member of the National Association of Cost Accountants.

---

## COSTS FOR OIL PRODUCERS

Oil is probably the quickest wealth producer we have and is aptly described by its screen title, "liquid gold." The perfection of so many different mechanical devices has made it a vital necessity of every day life, its uses ranging from the oiling of a typewriter to the operation of a motor car. There is no doubt but that this industry forms the greater portion of the revenue of more than one of our states. Its importance is further evidenced by the fact that our government maintains a separate division for the purpose of compiling statistics on all new fields.

Proper attention has not been given to accounting principles and methods which are of vital importance in this industry. It is safe to say that with the exception of a few handbooks, which deal more with field problems and points of simpler geology, and a few accounting manuals compiled and held for private use by some of the larger oil companies, it is hard to find any information in printed form of much assistance to the oil producer.\* The reason for this apparent neglect is that after the discovery well has "proved" a certain territory, every effort is concentrated on securing as much oil from the ground as fast as possible. It can be seen that under these conditions record keeping is given slight consideration. However, what can be more important to the oil producer in all this haste than to know just what his costs are; especially when he may have thousands of dollars worth of material lying at obscure points of the field and subject to deterioration, as often happens?

Oil is produced from the sands at various depths according

\*Since this article was written a book entitled Accounting for the Petroleum Industry, by Morland and McKee, has been published by McGraw-Hill Book Co.

to the field. The two different methods of drilling used are cable tool and rotary rig. The ground is pierced to a certain depth until the sand is reached. The hole is cased with various sizes of cylindrical iron pipe, dependent upon the conditions and the fields. The oil is then brought to the top of the ground either by the pressure of the gases underneath or by pumping. A well may flow for a time and then have to be put on the pump. The mixture that first comes out is known as emulsion. If this is of proper quality to be piped to the storage tanks and loading racks, it is commonly described as pipe line oil. However, the emulsion may have a large water content which must be removed by a dehydration process. This is termed treated or dehydrated oil. Furthermore, oil is of different gravities according to the various fields.

In compiling the following information, the data illustrated are applicable to a field where the oil has to be dehydrated. By so doing, not only are the accounting problems and methods applicable to other fields shown, but, in addition, a problem is described which the oil men are having to combat, viz. that of separating the water content from the emulsion. In the field used as an illustration, the majority of the wells are on the pump.

Oil costs are divided into two kinds, investment and production. Under the former are included all expenditures made up to the time the well is actually producing. These costs are capitalized. From this point on, the costs of production are encountered. Investment costs will be treated first.

## INVESTMENT COSTS

The principal investment accounts are usually classified as follows:

### I. Lease Investment

1. Cost of Lease
2. Buildings
3. Steel Tanks
4. Earthen Tanks
5. Line Pipe (including fittings)
6. Machinery
7. Miscellaneous

### II. Well Investment

1. Derricks
2. Casing
3. Tubing
4. Line Pipe (including fittings)
5. Drilling Labor
6. Fuel
7. Water
8. Cementing
9. Standard Pumping Equipment

10. Engines (including engines and oil and gas separators)
11. Tanks
12. Miscellaneous

### III. Power House Investment

1. Buildings
2. Machinery (24' band wheel power, idler and pulley, pull rods)
3. Line Pipe (including fittings)
4. Engines
5. Miscellaneous Equipment

### IV. Boiler Station Investment

1. Buildings
2. Boilers
3. Line Pipe (including fittings)
4. Miscellaneous Equipment

### V. Water System Investment

1. Buildings
2. Engines
3. Pumps
4. Line Pipe
5. Tanks
6. Miscellaneous Equipment

### VI. Drill Tools and Rigs Investment

1. Drilling Rigs
2. Tools
3. Miscellaneous Equipment

### VII. Motor Equipment

1. Touring Cars
2. Roadsters
3. Trucks

### VIII. Teams and Wagons

1. Lease Wagons
2. Teams
3. Portable Shops

### IX. Office Equipment

1. Furniture
2. Typewriters and Adding Machines
3. Miscellaneous Equipment

### X. Miscellaneous Field Equipment

1. Portable forges
2. Anvils
3. Acetylene Welding Outfits
4. Miscellaneous Tools

Some of the above accounts will now be explained—the items to be recorded thereunder and the method of operation.

The cost of lease should contain a charge only for land bought outright with mineral rights and does not include lease rentals which should be carried in a separate account. According to the usual custom, when land is leased for the purpose of obtaining the right to drill, the owner receives  $\frac{3}{8}$  of the oil produced. In the case of either lease or purchase of school lands, the state receives  $\frac{1}{16}$ . The owner of such lands would then receive  $\frac{1}{16}$  instead of  $\frac{1}{8}$ .

It is the practice of some of the larger oil companies to charge all casing, tubing and line pipe to the lease and then, as the well is completed, to charge out to it the exact amount of material used. However, the lease should also bear the cost of the proper amount of line pipe applicable to it.

Drilling labor should contain the time of foremen prorated over the number of wells actually drilling during the month and based on the number of days spent on each well as per the field reports.

Attention is called to the fact that it is the usual custom in the oil industry to charge fuel oil and water against a drilling well at the price sold to an outside consumer and not the cost. This is also done with steam furnished. However, there is no apparent reason why the actual cost can not be used.

Standard pumping equipment includes such items as sucker rods, working barrels, walking beams, bull wheels, etc., and all installation labor. When a well is standardized for pumping, a different type of crown block is used so that the derrick account must be adjusted to clear out the cost of the old block, the charge of the new one appearing under standard pumping equipment.

Under truck equipment is included a winch, hoist and other miscellaneous equipment. There are other tools which the truck carries for use throughout the field which properly appear under miscellaneous field equipment.

#### METHODS OF RECORDING CHARGES TO INVESTMENT ACCOUNTS

All main headings of the investment accounts appear as controls in the general ledger and are supported by a ledger showing the different classifications. For this, there should be provided sheets showing: Date, Folio No., Total, and sufficient distributive columns headed with the proper sub-accounts. A sheet is made out for each well, lease, power unit, boiler station, dehydrator unit, etc. The wells are numbered and take their name from the lease on which they are located. The other units are designated according to the lease on which they are built. At the end of the month, the investment ledger should be footed and put in agreement with the general ledger. To facilitate this, control sheets can be carried for each class of investment.



If the field extends over more than one county, it is desirable to show total expenditures by county. This can be accomplished by dividing the ledger into two parts. This would, of course, require an additional control sheet to accumulate the totals of each county. Practically all of the charges come from the voucher or accounts payable register and the material and payroll distributions books. In an oil company which is doing extensive drilling, it will be found that the postings are so heavy that they first have to be tabulated in a record named the Well and Lease Distribution Book before entry can be made in the investment ledger. This record will be fully described later.

### AMORTIZATION OF INVESTMENT

An extremely important point which must be considered is the amortization of the investment over the life of the field. The relation of amortization to costs will be taken up later at the proper time. Oil well equipment has a very small salvage value, making it all the more necessary to take care of this important item. In addition, one of the most valuable things for an oil man to know is whether the investment made on a certain tract is being returned to him through profit and at what rate. However, it must be borne in mind that if this is attempted, no comparison should be made of figures based on less than at least one year's exploitation of the field.

### PRODUCTION COST

The expense of bringing the oil to the top of the ground constitutes the lifting cost. This added to the expense of dehydration completes the production cost. After the administrative expenses have been added, the result is the total cost. Unless a field has been producing for some time and has been standardized so as to control production by well, costs can not be allocated except by lease. The different classes of expenses sub-divided are as follows:

#### I. Lease Expense

1. Well labor
2. Miscellaneous lease labor
3. Repairs
4. Fuel
5. Lubricants
6. Power furnished
7. Miscellaneous supplies

#### II. Power House Expense

1. Labor
2. Repairs
3. Fuel
4. Lubricants
5. Miscellaneous supplies

### III. Boiler Station Expense

1. Labor
2. Repairs
3. Water
4. Lubricants
5. Fuel
6. Miscellaneous Supplies

### IV. Dehydrator Expense

1. Labor
2. Repairs
3. Lubricants
4. Water
5. Steam
6. Royalty paid
7. Miscellaneous supplies

### V. Water System Expense

1. Labor
2. Repairs
3. Fuel
4. Lubricants
5. Miscellaneous supplies

### VI. Field Overhead

1. Salaries of production superintendents
2. Wages warehouse clerks
3. Repairs to warehouse stock
4. Teaming and hauling, and freight
5. Drill tools and rig expense
6. Small tools
7. Motor car expense and repairs
8. Teams and wagons expense
9. Gross production tax
10. Miscellaneous field expense

### VII. General Administrative Expense

1. Salaries of officers
2. Salaries purchasing department
3. Salaries production department
4. Salaries legal department
5. Office salaries
6. Postage
7. Telephone and telegraph
8. Heat and light
9. Repairs
10. Miscellaneous office expense
11. Interest

## VIII. Fixed Charges

1. Lease rentals and bonus
2. Depreciation
3. Depletion
4. Dry holes
5. Taxes
6. Insurance

### LABOR

The time of men employed is collected by the gang foreman on a simple form of daily time ticket showing: Date, Name, Occupation, and the Wells, Leases or other work engaged on during the day. These are checked and summarized semi-monthly by competent timekeepers on payroll sheets numbered consecutively giving: Name, Occupation, Wells, Leases, or other work done during the period and also the days absent and reasons therefor. A sheet is made out for each man and turned into the office. When the payroll is sent back to the field, each man signs as he receives his pay. The sheets are entered in a payroll distribution book showing: Date, Payroll sheet number, Occupation, Name of well, lease, or other unit, Sub-account to be charge, and Total. In addition the book has sufficient columns headed with the main classification of investment and expense accounts.

### MATERIAL

All material should be handled through centralized warehouses, which may be two or three in number according to the size of the field, and built near the tracks where possible or at points advantageous for the unloading of supplies from the cars and for hauling by truck. Distribution of material to the various wells should be made by route to conform with the drilling program. Stock withdrawn from the warehouse is recorded on a simple form of material transfer, giving: Date, Number of transfer, Description of material, Quantity, Unit Price, Amount and Well, Lease, or other unit sent to. The transfer is made out in duplicate, one copy being retained by the warehouse and the other by the general office. Only quantities are entered, the pricing and extension being completed in the office. All supplies transferred from one lease to another or sent back to the warehouse should be entered on an equipment transfer following out in a general way the same form as the other, except that space must be provided to show from where the material was taken and its new destination. One copy of this is kept by the warehouse and the other by the office. The material and equipment transfers are entered in a material distribution book, giving: Date, Number of transfer, Name of Well, Lease or other unit, sub-account to be charged or credited in Total, and sufficient columns headed with the main classification of investment and expense accounts.

## OVERHEAD

The distribution of overhead in the oil industry is rather complicated, as in order to secure accurate results a detailed proration is necessary. Some points in connection with it will now be explained.

Water system expense should be allocated to the boiler station, dehydrator or other unit, based on the amount of water furnished each, and should have credit at cost for all outside sales. However, it is the practice to charge water at the rate sold to consumers, and allow credit for outside sales at the same rate. Care must be taken to see that all drilling wells bear their pro-rata share of water furnished them.

Boiler station expense should be allocated to all units using steam and should be credited at cost with all outside sales. However, the same method is usually followed with this as with water expense. It is possible that not all companies take this view with regard to these items, but the practice is quite general. There seems to be no reason why cost can not be used. Drilling wells should be charged with their portion of steam used.

Power house expense is prorated over the various leases based on the number of wells being pumped on each.

Dehydration expense is charged to each lease according to the number of barrels of oil dehydrated from each tract. The dehydration royalty paid is one to the manufacturer of the machine and is calculated on the number of barrels run through the plant.

Gross production tax listed under Field Overhead is remitted to the state, and is based on the number of barrels produced.

All other items of overhead are prorated on the basis of production. The inclusion of interest as an element of cost brings up the much-mooted question. It can be said that in the oil industry, the majority of the independent oil companies must have financial help not only to extend their drilling operations, but to carry them over periods of depression due to a drop in the price of crude and the payment for such aid seems to be just as necessary an item of the cost of producing oil as any other.

## FIXED CHARGES

Land may be leased for any period of years, usually for five years or more. The rental is paid annually and should be charged out monthly the same as any other deferred charge. Lease bonus which represents a certain amount paid to secure an attractive tract is spread over the life of the lease and may also be charged out monthly. Depreciation will be set up at the rate meeting the requirements of the field. Oil well equipment after five years' usage shows considerable wear and tear. The provision for the remainder of the amortization of the investment will of course be taken care of in the depletion charge covering possible exhaustion of the mineral resources. The Department of the Interior offers

a bulletin published very recently on Estimation of Underground Oil Reserves by Oil Well Production Curves, the author of which is Willard W. Cutler, Jr. The loss incurred in dry holes should be spread over a period of several years. It will be noted that the royalty representing  $\frac{1}{8}$  paid to the land owner is not included. Oil men consider that they have no title to this  $\frac{1}{8}$  of the oil and are merely agents for the payment of this amount to the owner. The pipe line companies in some instances figure the oil purchased on a  $\frac{7}{8}$  and  $\frac{1}{8}$  basis. If the producer should have paid the royalty, he will, of course, be reimbursed for the  $\frac{1}{8}$ . This method of delivery has frequently raised the question whether costs should be figured on the quantity actually produced or the producer's share sold to the pipe line companies. The writer is inclined to the view that the entire cost of production should be applied to the company's share, which is  $\frac{7}{8}$  of the amount produced.

### METHODS OF RECORDING EXPENSES

The only successful cost system in the oil industry is one which will tie in with the financial records. An account is set up on the general ledger named Cost of Production, to which, at the end of the month, are charged all the main classifications of expense accounts as found on this control record. These accounts are in turn supported by a detail expense ledger showing all sub-accounts. In the cost department, the distribution of expenses is shown by lease, powerhouse, boiler station or other unit in a ledger provided with sheets made out for each one and so ruled as to show: Date, Folio No., Total, and the proper sub-classifications. For example, on the McKean Lease sheet would appear Well labor, Miscellaneous lease labor, Repairs, etc. The effect of this plan is that the expenses are classified not only as to kind but also as to lease, powerhouse or other unit and are kept in control with the general ledger at all times. In the event the field reaches over more than one county, it is desirable to show operations by county. In this case, as explained above, the cost ledger can be divided into two sections. Control sheets are carried to accumulate all totals. Practically all of the charges will come from the voucher or accounts payable register and the payroll or material distribution books. In the case of a great number of producing wells, the postings will be so numerous that they will first have to be tabulated in a record properly named the Well and Lease Distribution Book before entry can be made into either the investment, cost or expense ledgers. This record is divided into two sections, one for the investment accounts and the other for the expenses. Sheets are provided to show: Date, Page Number of primary record, Total, and sufficient columns to allow for all leases or other units. A separate sheet should be made out for every sub-classification of investment or expense accounts. For example, under Well Investment the drilling labor sheet would show the wells charged, while under Lease Ex-

pense, the fuel sheet will give the leases charged. These totals so accumulated may be posted periodically as desired. It can be seen that this book will be indispensable in connection with a large number of items such as the drilling labor account, under Well Investment, might contain. Over the period of a month there are here usually enough charges to fill more than one ledger sheet in the investment ledger. When it is considered that there are pages for every well and one or more sheets for every month, some idea can be had of the size of this ledger in only a few months.

An additional form for the cost department is the numbered printed journal sheet with space provided for distribution.

#### REPORTS

The usual monthly reports to be furnished are: (1) the investment cost statements for the month and period to date, divided as to county; and (2) the production cost statement with the cost shown by lease and by county with the per barrel cost shown also. The production cost statement is classified as follows:

1. Lifting Cost
2. Production Cost
3. Administrative Cost
4. Fixed Expenses
5. Total Cost

No can can realize unless actually on the field the size of the operations of a successful oil company. However, some idea may be gained from the fact that towns are built by the discovery of a field. And the quest for new pools goes on daily throughout the world in order to provide the necessary supply for tomorrow.

**Vol. II**

- No. 18—Uniform Cost Accounting Methods in the Printing Industry, *W. B. Lawrence*  
No. 19—A Cost System for an Electric Cable Plant, *Fred F. Benke*

**Vol. III**

- No. 13—A Premium Incentive Wage Plan, *J. H. Paterson.*

**Vol. IV**

- No. 3—First New England Regional Conference  
No. 6—Cost Practices and Problems in the Production of Coke, *C. C. Sheppard*  
No. 7—Production Costs in the Manufacture of Phonograph Records, *C. J. Borton*  
No. 8—Cost Problems in the Wrought Iron Industry, *Carl G. Jensen, Comp.*  
No. 10—Cost Accounting for Cranes and Hoists, *P. E. Stotenbur*  
No. 11—Cost Accounting in the Tool Steel Industry, *John J. Keefe*  
No. 16—Standard Costs—How to Establish and Apply Them, *William F. Worrall*  
No. 17—A Method of Collecting Direct Labor Costs and Statistics, *George H. Friesel*  
No. 18—Cost Accounting for Self Laying Track Tractors, *Percy Ehrenfeldt*  
No. 19—Papers and Discussions—Third New England Regional Cost Conference  
No. 21—Cost Accounting in Relation to Business Cycles, *John R. Wildman*

**Vol. V**

- No. 6—Cost Accounting in the Production of Motion Pictures, *William R. Donaldson*  
No. 8—A Practical Method of Cost Accounting in a Shipbuilding or Ship Repair Plant, *L. V. Hedrick*  
No. 9—Getting the Most Out of Business Records, *Matthew L. Carey*  
No. 10—The Expense of Power and Building Service, *James P. Kendall*  
No. 11—Indirect Labor, *Harry J. Ostlund*  
No. 16—Budgetary Control, *William Carswell*  
No. 17—A Foundry Cost System, *Machinery Builders' Society*  
No. 18—Methods of Supplying Cost Information to Foremen, *Hugo Diemer*  
No. 19—Cost Accounting in a Metal Stamping Plant, *E. H. Wildt*  
No. 20—Use of Accounting Information and Statistical Data in a Department Store, *A. C. Hodge*  
No. 21—A Basis for Cost Accounting in Banks, *Gordon Wilson*  
No. 22—Importance of the Cost of Idleness in Equipment Industries, *E. F. Du Brul*  
No. 23—Controlling the Labor, *W. O. Cutter and others*

**Vol. VI**

- No. 1—Executive Uses of Costs, *Howard Berry*  
No. 2—Operating Ratios and Costs as Guides to Management, *Urban F. von Rosen*  
No. 3—The Use of Budgets in Reducing Overhead, *Ray W. Darnell*  
No. 4—Distributing the Overhead, *Nelson J. Bowne*  
No. 5—Cost Accounting in the Domestic Beet Sugar Industry, *F. L. Crawford*  
No. 6—Co-operation Between the Comptroller and the Engineer, *Major J. W. Swaren*  
No. 8—The Administration of the Budget, *Harry C. Senour*  
No. 9—Administrative and Selling Costs, Their Nature and Distribution, *W. H. Higginbotham and Andrew Stewart*  
No. 10—Pricing the Inventory, *W. F. Vieh*  
No. 11—Profit Sharing as a Method of Compensation, *Professor Ralph E. Heilman*  
No. 12—Overhead During Low-Volume Production, *A. F. Stock and J. M. Coffey*  
No. 13—Standard Costs—Their Development and Use, *F. Brugger*  
No. 14—The Management Function in Business, *J. Gordon Steele*  
No. 15—Internal Organization of a Manufacturing Company, *D. M. Farish*  
No. 17—The Executive's Viewpoint in Reference to Cost Figures, *E. Kent Hubbard*, and Cost Figures from the Viewpoint of the Factory Executive, *J. Ernest Andrew*  
No. 19—How Can Cost Work Be Simplified Without Impairing Accuracy, *F. H. Corregan*  
No. 20—Costs For Oil Producers, *R. W. Cobb*

Copies of the above publications which are not out of print may be obtained from the office of the Secretary of the Association, 130 W. 42nd Street, New York City, at the price of 75 cents per copy.