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Anthracite Mine Accounting*

By HARRY C. McCLUSKEY

Accounting for anthracite mines presents a few accounting problems not encountered in other industries. The anthracite operator not only secures all his raw material from the earth, but engages in the preparation of the raw material for the market. He may thus be classed as a manufacturer as well as a miner.

One of the problems of anthracite mining confronting the accountant is the question of capital expenditures.

CAPITAL EXPENDITURES

The cost of mine buildings, structures, machinery and equipment, less their scrap or residual value, when the mine is exhausted, should be regarded as deferred charges to profit and loss and to the cost of producing coal. These items are sometimes reflected in the profit-and-loss account as depreciation or amortization.

The general practice is to consider all expenditures for buildings, structures, machinery, equipment and mine developments, less the revenue from coal mined during the time in which the developments are in progress and before the mine has actually begun to operate, as charges to capital-expenditure accounts.

All normal expenditures of a similar nature subsequent to the beginning of operations, which are required to maintain the present output, should be charged to operating expenses. Those required to increase the output should be charged to capital accounts. Any charge to capital accounts presupposes an expenditure incurred for which benefits will be received in the future.

Charges for mine developments should be carefully scrutinized to avoid charging to capital accounts expenditures which are applicable only to coal now being mined and expenditures on account of coal to be mined in the future charged to profit-and-loss or operating accounts.

VALUATIONS OF COAL LANDS AND LEASEHOLDS

It has been the general practice to carry the values of coal lands and leaseholds of coal lands on the books at cost. With

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the coming of the income-tax laws it became necessary to revalue or to restate these values on the books in order properly to account for the taxable income. But even though these values are restated, the books should indicate the actual cost values for the purpose of properly accounting for these investments and for determining the profit or loss irrespective of taxable income.

In order to show on the books and balance-sheets the cost values of these assets, even though they have been revalued, the following method is suggested.

Assume a balance-sheet before a revaluation as follows:

Cash	\$ 100,000	Capital stock	\$1,000,000
Coal lands	1,000,000	Surplus	100,000
(10,000,000 tons 10c)	\$1,100,000	\$1,100,000	

Note that the depletion rate on the basis of this balance-sheet is at the rate of ten cents a ton.

A revaluation is made on the proper basis and it is determined that the fair market value of the coal lands at March 1, 1913, is \$2,000,000 instead of \$1,000,000 as shown on the books. This increase in valuation may then be recorded in an entry:

Coal lands	\$1,000,000
Surplus arising from a revaluation of coal lands..	\$1,000,000
To record the additional value of coal lands in accordance with a revaluation of March 1, 1913.	

The balance-sheet will then appear as follows:

Cash	\$ 100,000	Capital stock	\$1,000,000
Coal lands	2,000,000	Surplus arising from a revaluation of coal lands..	1,000,000
(10,000,000 tons 20c.)		Earned surplus	100,000
	\$2,100,000	\$2,100,000	

This balance-sheet still shows, by the combination of the accounts coal lands \$2,000,000 and surplus arising from a revaluation of coal lands \$1,000,000, the original cost value of this asset.

The company operates for one year and ships 1,000,000 tons of coal. On the basis of twenty cents a ton, the depletion charge would amount to \$200,000 and would be recorded in an entry:

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Depletion (profit and loss account)	\$ 200,000
Reserve for depletion	\$ 200,000
To record the amount of depletion of 1,000,000 tons of coal at 20c. a ton.	

And an entry :

Surplus arising from a revaluation of coal lands.....	\$ 100,000
Earned surplus	\$ 100,000
To transfer to earned surplus that portion of surplus arising from a revaluation of coal lands, earned during the year, based on the additional amount of depletion charged, which was caused by a revaluation of coal lands as of March 1, 1913.	

Assume that the profit-and-loss statement shows the following :

Sales for cash	\$5,000,000	
Operating expenses	\$4,800,000	
Depletion	200,000	5,000,000
Net profit	\$0,000,000	

The balance-sheet would then show :

Cash	\$ 300,000	Reserve for depletion	\$ 200,000
Coal lands (9,000,000 tons)	2,000,000	Capital stock	1,000,000
		Surplus arising from a revaluation of coal lands..	900,000
		Earned surplus	200,000
	\$2,300,000		\$2,300,000

This balance shows the original cost of the balance of the coal remaining unmined if the accounts are combined as follows :

Coal lands (9,000,000 tons)	\$2,000,000
Less reserve for depletion	200,000
	\$1,800,000
Less surplus arising from a revaluation of coal lands	900,000
Original cost 9,000,000 tons at 10c.	\$ 900,000

The reason for the increase of \$100,000 in earned surplus, although the profit-and-loss account shows no profits, may be explained by using the original depletion rate based on the actual cost of the coal, or 10 cents a ton.

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A recalculation of profits using the original depletion rate would indicate a profit of \$100,000 as follows:

Sales		\$5,000,000
Operating expenses	\$4,800,000	
Depletion (1,000,000 tons at 10c.)	100,000	4,900,000
Net profit		\$ 100,000

When making a revaluation of coal lands as well as leaseholds of coal lands, consideration should be given to the time necessary to mine the coal. The worth or value at the date of the revaluation should be discounted in accordance with the time which must elapse before any income is received from the coal under ground. Coal which will not be mined within approximately fifty years will therefore have no value and should not be shown on the books unless a later revaluation is made. In case a subsequent revaluation is made the values should be accounted for and depleted in the manner outlined for a revaluation as of March 1, 1913.

If a mining company owns leases which have a value of March 1, 1913, this value should be based on the amount representing the difference between the fair market value of the coal lands held under lease and the amount of royalties paid to the lessors.

Leasehold values should be depleted in the same manner as coal lands held in fee.

The revaluation of buildings, structures, machinery, equipment and mine developments should be handled in the same manner as coal lands, and depreciation should be treated in the same way as depletion.

If, however, assets have been revalued and the increased valuation is due to the fact that too much depreciation was charged off in the past, that portion should be credited directly to earned surplus and not to a surplus arising from a revaluation of assets.

DEPRECIATION AND AMORTIZATION

Charges for depreciation or amortization are classed as profit-and-loss or cost accounts and represent the estimated amount of loss incurred through the wear and tear of assets or their loss through passage of time when they become obsolete or the mine has been exhausted.

Mine buildings, structures, machinery and equipment should be depreciated on the basis of wear and tear or their life. In case the life of the mine is shorter than that of these assets, depreciation may be charged off in two ways:

1. On the basis of the life of the mine, charging off a certain equal portion each month.
2. By charging off a certain equal amount per ton as the coal is produced based on the estimated number of tons to be mined.

The second method is commendable in that it equalizes the depreciation cost per ton regardless of the number of tons produced each month.

The use of the first method will cause a fluctuation in the depreciation cost per ton as the production varies from month to month.

If the second method is used care should be taken to see that the proper amount is charged off on the "time" basis at least at the close of the fiscal year.

DEPLETION

Depletion represents the cost of the coal mined and used in the production of the marketable product. It represents the amount by which the investment in coal lands or leasehold equity in coal lands is reduced by the removal of coal.

The amount per ton to be charged off as depletion is calculated by dividing the cost of the coal lands or leasehold equity in coal lands by the estimated number of tons to be realized from the mine.

OPERATING EXPENSES AND COST ACCOUNTS

The operating expenses or cost accounts are divided into two general classes: inside expenses and outside expenses. Aside from the question of supervision, this general classification is useful on account of the difference in physical condition inside and outside the mine.

Inside expenses cover the cost of labor, supplies and expenses in the mining and transportation of coal underground and includes the cost of operating the ventilation machinery and equipment.

Inside expenses may show material differences in the cost per ton from month to month. These differences may be due to

the physical conditions of the mine such as faults or irregularities in the seams, more or less top and bottom rock for which allowances are made to miners, timbering necessary on account of the character of the top of the gangway or chamber, the length of haul to the main shaft, drainage and ventilation required, etc., and the changes in these conditions during various cost accounting periods.

The outside expenses cover the cost of transportation and preparation of coal after it has been removed from the mine and generally remain quite uniform as to cost per ton.

COST OF VARIOUS SIZES

Anthracite is prepared for the market in various sizes which are divided into two general classes: domestic or large sizes and steam or small sizes. Both these general classes include several standard sizes. On account of the difference in the amount realized from sales between the large and small sizes, it is the intention of each operator to produce as great a percentage of large sizes as possible. The large sizes have a sales value greater than the average cost of all sizes, while, on the other hand, small sizes are sold at a price under the average cost. Furthermore, the market for small sizes fluctuates frequently both in price and in demand. It would seem to be better accounting to consider the small sizes as by-products rather than regular products.

It is suggested that the total amount realized from the sale of small sizes or an arbitrary amount somewhat near the market price of small sizes be credited to the cost of the large sizes.

Even though the small sizes were treated as by-products it would be impossible to distinguish between the cost of various large sizes such as lump or chestnut. The cost of large sizes should be carried at the average cost per ton.

RESERVE FOR MINING HAZARDS

In view of the fact that anthracite mining is a business of a hazardous nature and mining companies are liable to uninsurable losses such as fires, explosions, floods and cave-ins or squeezes, it is undoubtedly good business and good accounting to set aside a reserve to cover these losses. Experience shows that uninsurable accidents are frequent and it would seem to be poor accounting not to reflect these losses in the cost of coal just as insurance is considered a proper cost charge.

STRIPPING EXPENSES

Stripping operations are performed for the purpose of removing earth, rock, etc., from the surface so that the coal exposed may be mined and in order to prevent an excess of refuse from entering the mine when the coal near the surface is mined underground.

The expense of stripping the surface earth, rock, etc., termed "overburden," may accumulate for a long period preceding the removal of the particular coal to be obtained from the operation. The expenses then become a deferred expense similar to certain inside developments, such as rock tunnels, etc. A portion of these deferred expenses should be charged to the profit-and-loss or cost accounts, as the coal is removed and the amount to be charged off based on the estimated tons to be obtained divided into the total deferred stripping expenses.

Should stripping expenses be incurred concurrently with the removal of coal, these expenses should not be charged to deferred stripping expenses but to the current operating accounts. The accountant should diligently inquire into the nature of stripping expenses so as to determine, in the case of a deferred asset account, whether the account has been properly decreased by charges to operating expenses and to the cost of the coal procured from the stripping operation and the relative number of tons to which the deferred expense should be charged. And in case of an item of cost covering stripping expenses, as to whether such expenses represent correct amounts applicable to the coal being obtained from the stripping during the current cost period.

CULM BANK COAL

Culm banks are by no means common to every anthracite mine, but the quantity of coal secured from these banks by operators who do own them entitles them to special accounting consideration.

Culm banks, however, produce less than 5% of the total anthracite tonnage and will doubtless soon become extinct.

Culm banks are large refuse dumps containing small sizes of coal and were made by early operations before such sizes were marketable.

These sizes are now marketable and they can be extracted from the refuse or culm with modern coal preparation apparatus.

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The cost of culm-bank coal will be considerably lower than that of freshly mined coal. In fact, the difference in cost is such that it would be misleading were average costs of both culm bank and freshly mined coal used. The cost of each kind of coal should be kept entirely separate.

Sometimes culm-bank coal is prepared in a plant built for that purpose, called a washery, and the keeping of separate costs in this case is a simple matter. But if culm is run through the breaker at the same time as freshly mined coal, the separation of the costs of each kind of coal becomes a problem of apportionment.

The apportionment may be made quite accurately on the basis of tests of the quantity of coal realized per ton of culm and the number of tons of culm run through the breaker.

Culm banks should be valued for income-tax purposes in the same manner as underground coal and depleted as the coal is separated from the refuse.