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Reserves Impact on Book Value Calculations

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Disclaimers



- The purpose of SPE paper 162907 and this presentation is to provide a general description of the DD&A process in accounting for oil and gas operations.
- This presentation is intended for non-accountants.
- This accounting discussion covers the relationship of reserves to DD&A calculations on a before income tax basis.
- Ryder Scott is not an accounting firm and is not providing accounting advice.

Why Do Reserves Matter?



- New reserve discoveries may not be produced for many years.
- The portion of reserves sold annually from a well or field is typically small compared to the remaining reserves.
- How do the reserve volumes impact the financial performance of the company?

Most young engineers don't have a clear understanding of how reserves impact the financial performance of the company.

Where do reserves come in?



Three main types of Accounting Information:

- Income Statement – how much money the company made and spent over a period of time.
- Balance Sheet – what the company owns and owes at a point in time.
- Cash Flow Statement – shows how changes in the balance sheet and income statements affect cash and cash equivalents.

Income Statement



- Income Statement (Profit & Loss)
 - Goal is to show net income over a period of time (typically one year):
 - Revenues from sale of oil & gas
 - Less expenses
 - Costs and operating expenses
 - Taxes
 - Depreciation, Depletion, and Amortization
 - Write-offs

Balance Sheet



- Provides a summary of the financial position at a single point in time.
- $\text{Assets} - \text{Liabilities} = \text{Equity}$
- Reserves are considered a long term asset, but there is no place in the balance sheet to put barrels or mcf.

Cash Flow Statement



- Documents cash moving in and out of the company.
- Cash basis – excludes accruals, non-cash transactions.
- Provides information on:
 - Operating activities
 - Investing activities
 - Financing activities

Supplemental Information



- Reserve information is reported in the unaudited supplemental information in the annual report.
- Information is typically presented at a summary level by country or continent.

The Property is the Asset



- What is a property?
- To accountants, a property is a well, lease, reservoir, or a field that is treated as a single entity.
- Money is spent to develop a property, and hopefully the property will produce an income stream
- How do we get a property?

Explore, Discover, Develop:

- Generate a prospect
- Gain rights to acreage
- Drill wells to discover a resource
- Develop the resources into reserves

» or

Buy a property that is already developed or in the process of development.

What is the value of the reserves?



- The value of the reserves is based on the capitalized book value

What does Capitalized mean?



- Costs can be either capitalized or expensed.
 - Capitalized costs create or increase the value of a property. They are recorded as a long term asset on the balance sheet.
 - Expensed costs maintain the value or cover the overhead costs of managing the property. They are charged against earnings in the current year.

What is Book Value?



- All of the net capitalized costs associated with a property are its Book Value.
- Book value is not fair market value, and it is not the value from the reserve report (unless it has to be written down – more on that later).
- Each year, the book value needs to be adjusted to account for the value that is lost when oil and gas is produced.

What Costs are Capitalized?



- In order to discuss this, we're going to have to talk about Full Cost and Successful Efforts accounting methods.

What are they?



- There are two different ways of accounting for oil and gas operations.
- Companies choose to adopt either the Full Cost method or the Successful Efforts method to account for their oil and gas activity.

What is Full Cost?



- All of the costs related to exploration and development drilling, including any dry holes, are capitalized into a Full Cost Pool.
- Also included are lease rentals, geologic studies, and any administrative overhead directly related to the exploration, development, or acquisition of the properties.
- A full cost pool covers all of the activity in a single country.
- The rationale is that all of the costs that the company spends, even those spent on dry holes, are a necessary part of the oil business.

Full Cost (con' t)



- Because of the size of the full cost pool relative to any single well, the impact of a new well, either successful or dry, should not have a material impact on the company's financial results.
- Full cost companies should have more stable financial results.

Successful Efforts



- The cost pool is limited to a single property or group of properties related by a common geologic or stratigraphic feature.
- Exploratory dry holes are expensed.
- Successful wells are capitalized.
- Development dry holes are capitalized.
- Geologic evaluation costs are expensed.

Successful Efforts (con' t)



- Under successful efforts, the impact of a significant discovery (or dry hole) should be more immediately reflected in the financial results.

Full Cost versus Successful Efforts



- Smaller companies tend to prefer full cost for the stable financial results.
- Smaller companies tend to switch to successful efforts as they grow.
- Larger companies tend to prefer successful efforts.
- Very few instances of companies switching from successful efforts to full cost.

Back to capitalizing costs



- So what gets capitalized depends on whether the company is full cost or successful efforts.
- The capitalized amounts are additions to the book value.
- But we said that the book value has to be adjusted for production. How do we do that?

- Up to now we have discussed how book value is created or increased, and how it becomes a long term asset on the balance sheet.
- The process by which the book value is adjusted to reflect the removal of some portion of the reserves through production, and the usage of the necessary equipment, is called Depreciation, Depletion, and Amortization.

What is DD&A?



- Depreciation is the reduction to the book value of the equipment as it is used up / wears out.
- Depletion is the reduction of the book value of the mineral assets as they are removed from the reservoir.
- Amortization is the process of making these adjustments over time.
- DD&A is a “non-cash” item.

Depletion Rate



- In order to adjust the book value, the accountants calculate the Depletion Rate.
- $\text{Depletion Rate} = \text{Book Value} / \text{Reserves}$
- Then, Annual DD&A =
 $\text{Depletion Rate} * \text{Annual Production}$

What reserves do we use?



- For a full cost company:
 - Total proved reserves – both developed and undeveloped.
 - Since undeveloped reserves are used, it is important that the capital estimated to develop those reserves be included also.

What about a Successful Efforts Company?



- For a successful efforts company:
 - Reserves and equipment are amortized over the life of the proved developed reserves
 - Proved property acquisition costs are amortized over the life of the total proved reserves
 - Under UK or International Generally Accepted Accounting Principles, companies can elect to include probable reserves also.

What units do we use?



- Barrel-Oil-Equivalence (BOE) or MCF-Gas-Equivalence (MCFGE) are typically used, and the equivalence can be based on:
 - Volumes - MCF to barrels
 - Energy – MMBTU
 - Price – current prices received during the year

Write-Downs



- One of the basic tenets of accounting is that the book value is the lesser of actual capitalized costs less deductions, or current value.
 - If the reserve report shows that the value is less than the net book value, the property is “impaired” and a write down may be necessary.
 - The impairment process is different between full cost and successful efforts.

Full Cost Impairment



- The discounted present value in the reserve report is compared to the net book value (full cost pool).
- If the net book value is higher, it is written down to the discounted present value.

Successful Efforts Impairment



- The net book value is compared to the reserve report as in full cost, but adjustments can be made:
 - Expected future price and cost changes can be considered;
 - An appropriate discount rate can be used
 - Certain adjustments can be made for income taxes

Workovers - Capitalize versus Expense?



- Capitalized workovers – should result in additional proved reserves:
 - A recompletion
 - A sidetrack to a new zone
 - A deepening to a new zone
- For a successful efforts company, an unsuccessful workover might be expensed if it was exploratory in nature.

Expensed Workovers



- A workover to stimulate or restore production from a currently completed zone would be expensed.
- A successful expensed workover can result in an increase in the reserve booking for that completion.
- Does the reserve booking increase mean “additional reserves” were found, meaning that the workover should be capitalized?

Additional Reserves



- The accounting texts refer to “additional reserves” – not “booked reserves”.
- The nature of the expenditure is to develop proved reserves, therefore it is capitalized.
- Whether the reserves were recognized and booked as such before the workover does not change the nature of the expenditure.

Other Issues – Royalties and Overriding Royalties



- Owners of royalties or overriding royalties often do not have the necessary data to perform rigorous depletion calculations
- For full cost companies, the properties would be added to the cost pool.
- For successful efforts, alternative methods such as aggregation into a single entity and straight line DD&A is permissible.

Other Issues – Statutory Depletion



- Discussions on depletion usually involve a question on Statutory Depletion
 - Statutory Depletion (sometimes called Percentage Depletion or Depletion Allowance) is a method of determining the DD&A deduction for federal income tax purposes.
 - Permissible for royalties, overrides, and small investors in situations where there is insufficient information or impractical to perform DD&A calculations.

Conclusions



- Reserve volumes directly impact the depletion rate.
- Higher reserve volumes translates to a lower depletion rate, which yields higher net income.
- Proved undeveloped reserves are just as important to a full cost company as developed reserves.
- Since proved undeveloped reserves are only considered in the depletion of the leasehold for a successful efforts company, their impact is diluted.

Observations



- The ability to book more proved undeveloped reserves under the new SEC regulations, along with the opportunity to recognize large proved undeveloped reserves in resource plays, means that undeveloped reserves have more opportunity to impact a company's financial results.

Observations



- The DD&A process entails two variables – Capitalized costs and reserves.
- Capitalized costs are objective – the accountants can easily add up the costs.
- Reserves are subjective. Engineers need to be mindful that their work directly impacts the company's financial reporting.

Questions?

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