**Depreciation and Depletion**

**Chapter 11**

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### Depreciation, summary

**Why?**
- Matching!

**How much?**
- Cost of asset less estimated salvage value.

**How?**
- Methodology which most closely approximates use of the asset.
  - **Straight line**: most common. Depreciation is the same every period. Assumes ratable asset benefit/use.
  - **Activity based**: when asset is consumed at a rate approximating the units it produces. Therefore depreciation expense may vary from period to period depending on units produced.
  - **Sum of the years digits**: Accelerates depreciation, thus indicating that the asset is more productive in its' earlier years.
  - **Declining balance**: Also accelerates depreciation. Does NOT include salvage value. When asset gets depreciated to salvage value, you stop.

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**Calculating Depreciation**

**Facts to be known:**
1. Historical cost
2. Salvage value
3. Estimated service life

One and two above are collectively known as the **Depreciable Base**

Number of years that the assets is capable of economically providing the service it was purchased to perform.

Not to be confused with the physical life.

Is dependent on “Economic and Physical” factors.

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**Methods of Depreciation**

- **Financial Accounting Depreciation Methods**
  - Activity
  - Straight-line
  - Decreasing Charge
- **Tax Depreciation**
  - Special methods
    - 1. Declining Balance
    - 2. Sum-of-the-years’ digits
- **Composite method**
- **Hybrid methods**
Depreciation Example

Facts:
- Cost of machine: $260,000
- Estimated useful life: 10 years
- Estimated salvage value: $20,000
- Productive life in hours: 60,000 hours
- Hours machine used 1st year: 6,000 hours
- Hours machine used 2nd year: 12,000 hours
- Hours machine used 3rd year: 3,000 hours

Compute depreciation in years 1, 2 & 3 Using: Straight line, sum of the years digits, and activity based depreciations.

Solution to depreciation example

FACTS FROM PROBLEM COMPUTATIONS: DEPRECIABLE BASE
- Cost: $260,000
- Life: 10 years
- Estimated Salvage value: $20,000
- Depreciable Base: $240,000
- Productive life hours: 60,000

STRAIGHT LINE:
- Depreciable base: $240,000
- Life: 10 years
- Annual depreciation: $24,000

YR 1, 2 & 3
- Year 1: Hours 6,000
- Year 2: Hours 12,000
- Year 3: Hours 3,000
- Depreciation is the same in Yr 1, 2 & 3 at: $24,000

ACTIVITY:
- Depreciable base: $240,000
- Units this year/total estimated units: 10%, 20%, 5%

SUM OF THE YEARS DIGITS
- Depreciable base: $240,000
- Years remaining/years total: 10/55, 9/55, 8/55
- Year/years total expressed as a decimal: 0.1818, 0.1636, 0.1455
- Depreciation expense: $43,636, $39,273, $34,909

DOUBLE-DECLINING BALANCE
- Depreciable base does NOT factor salvage value for DDB
- Double declining balance factor: 0.40
- Year 1: $200,000
- Year 2: $120,000
- Year 3: $72,000
- Depreciated base after 3 yrs: $50,000

Double-Declining Balance
- First compute the straight line as a percentage, okay so lets say it is a 10 year life, then that would be 10% per year right? If it was a 3 year life (like a computer), then that would be 33.3% right?
- Okay, like the description says- double it- that means 20% for a 10 year asset or 66.7% for a 3 year asset.
- Alright now all you do is apply that percentage to each beginning net balance- voila! Remember, it is the only method which requires that you know the beginning NBV (that means AFTER accumulated depreciation).

Double Declining Balance
- Cost: $500,000
- Life: 5 years
- Estimated Salvage value: $50,000
- Productive life hours: 60,000
- Year 1 hours: 6,000
- Year 2 hours: 12,000
- Year 3 hours: 3,000
- Depreciable base does NOT factor salvage value for DDB: $500,000
- Double declining balance factor: 0.40
- Year 1: $200,000
- Year 2: $120,000
- Year 3: $72,000
- Depreciated base after 3 yrs: $50,000

* Note that in final yr. We only record as much depreciation expense as necessary to reduce to estimated salvage value.
Depletion

Used to account for natural resources which are physical consumed over the period of use, such as petroleum, minerals and timber.

Depletion Base =
- Acquisition cost of property
- Exploration costs
- Development costs
- Restoration costs

TYPICALLY CHARGED TO COST OF SALES

Depletion

Used to account for natural resources which are physical consumed over the period of use, such as petroleum, minerals and timber.

Depletion Base =
- Acquisition cost of property
- Exploration costs
  - successful efforts or full-cost
- Development costs
  - intangible costs such as drilling, tunnels, shafts, and wells
- Restoration costs

TYPICAL DEPLETION IS ACTIVITY-BASED

GENERALLY CHARGED TO COS EQUIVELANT NOT A DEPRECIATION EXPENSE

DEPLETION EXAMPLE

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost (in $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase mineral rights</td>
<td>500,000</td>
</tr>
<tr>
<td>Purchase equipment</td>
<td>250,000</td>
</tr>
<tr>
<td>Drilling costs</td>
<td>50,000</td>
</tr>
<tr>
<td>Costs incurred “up-front”</td>
<td>800,000</td>
</tr>
<tr>
<td>Estimated Restoration</td>
<td>200,000</td>
</tr>
</tbody>
</table>

TOTAL DEPLETION BASE: $1,000,000

Estimated total barrels of oil: 5,000,000

Estimated cost/barrel: $0.20

What is the basis when placed in operation?
- $800,000

What is the basis when all 5,000,000 barrels pumped out?
- ($200,000)

What do you call a credit balance?
- LIABILITY!!

Impairments

An impairment of a depreciable asset occurs when:
- the carrying amount of the asset is not recoverable, and therefore a write-off is needed.

The recoverability test determines if an impairment has occurred.
- Recoverability test only required under FAS 144 when an “event or change in circumstances” indicates that an impairment might have occurred.

RECENT UPDATE!!!

Does our current economic environment impact prevalence of impairments?
Impairments

Impairment occurs when --
- expected future UNDISCOUNTED net cash flows is less than,
- the asset’s carrying value

Events that might lead to an impairment
- Discontinued development
- Discontinued product development
- Economic/Environmental
- Anything that makes you think Hmm, I wonder if the asset really has a future value to the Company?

Impairments- assuming you have reason to test.

Recoverability Test --
- If there is an event or change in circumstance which cause some doubt over the future value of the asset, then do the test:
- If expected future net cash flows (undiscounted) is less than the carrying amount of the asset -- then asset has been impaired.

Measuring Impairments --
- Loss is amount by which the carrying amount of asset exceeds its fair value
  - Fair value = Market value
  - If no active market value, then FV = PV of expected future net cash flows
- The charge is recorded as a current expense (due to a change in estimate) and goes towards additional accumulated depreciation (it is like catching up on depreciation):
  - Impairment expense XXX
  - Accumulated depreciation XXX

LETS DO AN EXAMPLE