WALL STREET PREP
FINANCIAL TRAINING SOLUTIONS

Introduction to Oil & Gas Industry, Accounting & Financial Statement Analysis

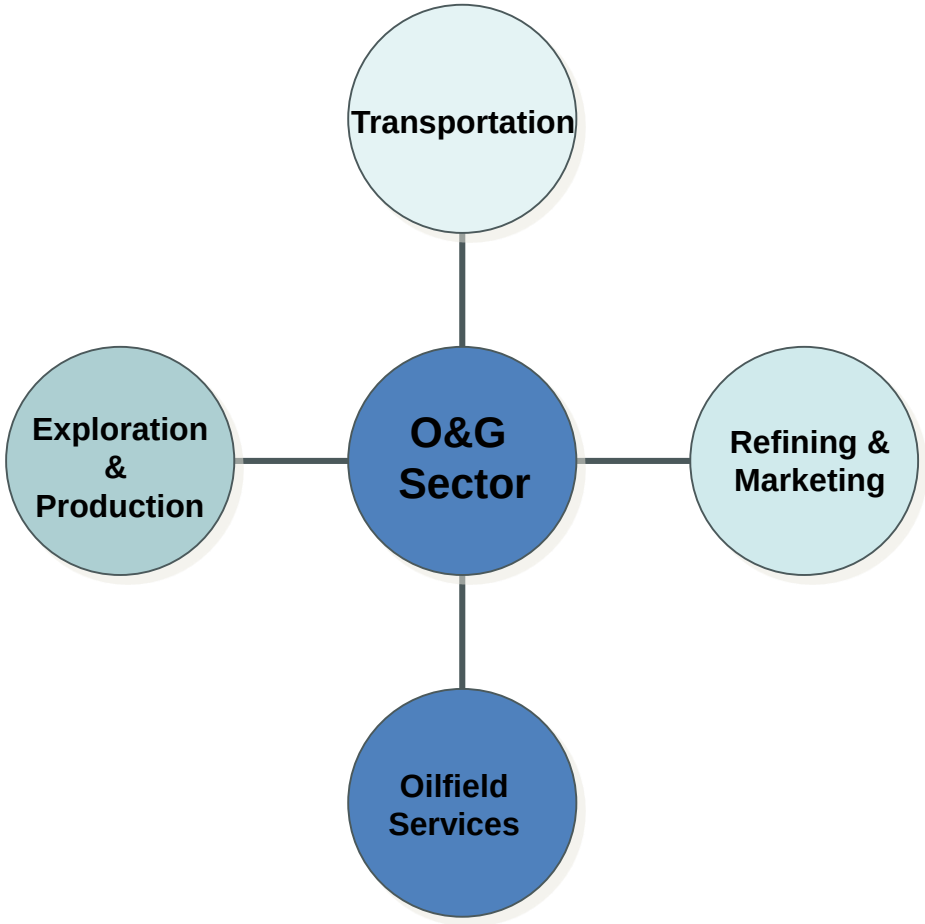
Oil & gas industry sectors and players

A number of distinct yet interconnected sectors

- There are a number of sectors that make up the O&G industry – each focused on a specific process in the value chain.

Companies focus on one sector

- Given the complexities of this extractive industry, most companies focus on one particular sector.



Oil & gas industry sectors and players

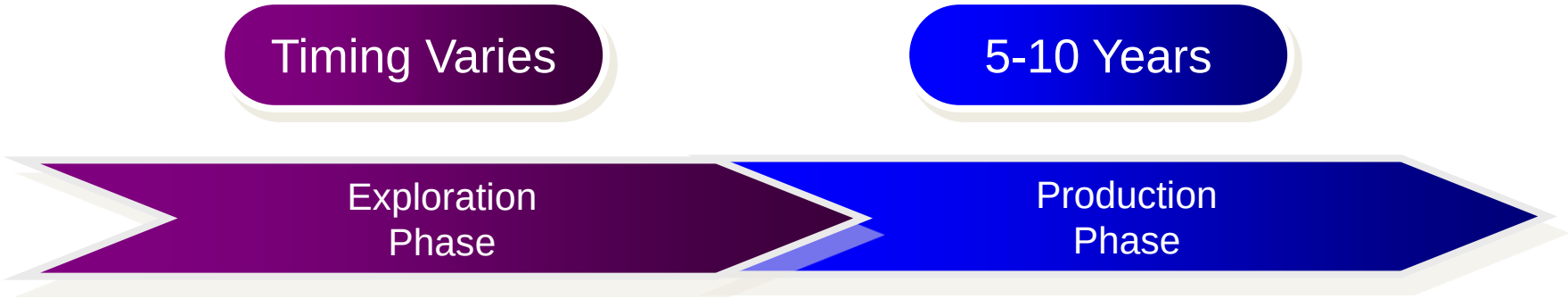
Mission – to find and extract

- The Exploration & Production sector involves all operations associated with finding and extracting oil and gas.
- E&P sector can be broken out into the exploration and production components.
- Timing between the two components can take years (and usually does!).

Crude terms

- Exploration & Production is typically referred by its acronym: E&P.
- Companies focused only on this sector are referred to as E&P companies.
- E&P is also known as the upstream sector, to indicate the upward extraction of the commodities.

Oil & gas industry sectors and players



- Pre-license prospecting
- Property/land rights acquisition
- Exploration drilling
- Evaluation and appraisal
- Development

- Primary recovery method
- Secondary recovery method
- Tertiary (enhanced) recovery method

Oil & gas industry sectors and players

Prospecting

- Involves performing a number of geological evaluations/surveys to determine hydrocarbon presence .

Property acquisitions

- Involves activities relating to securing the rights from the property owner to explore for and produce oil & gas in that field/area.
- Fiscal terms surrounding property acquisitions (what is owned by the oil companies versus original land owners/government) are complex; we will examine them in the later section.

Exploration (drilling)

- Involves drilling exploration wells to determine if commercial hydrocarbon quantities exist.

Evaluation and appraisal

- Involves confirming the initial exploration results through appraisal wells drilled to gain further insight into the property, including the size of the reservoir.

Development

- Involves activities relating to developing the discovered O&G reserves for production.

Exploration costs (part 1)
- Geological and geophysical (G&G) costs

Acquisition costs
- Related to acquiring the rights to explore and develop

Exploration costs (part 2)
- Exploratory drilling

Exploration costs (part 3)
- Often include appraisal-related costs

Development costs
- Drilling costs
- Storage costs

Oil & gas industry sectors and players

Production – the beginning of the end

- Involves extracting, storing, and getting O&G ready for shipping.
- Companies typically follow a number of recovery methods to prolong the production life of the property (typically 5-10 years).

Primary recovery

- Relies on the underground pressure, which if sufficient, will force O&G to the surface.
- Less than 40% of O&G in the U.S. can usually be extracted using this method.

Secondary recovery

- Implemented when natural pressure is insufficient to sustain commercial O&G production.
- Utilizes a number of various methods – pumps, water injection, natural gas re-injection and gas lift – to sustain production.
- Accounting for about 50% of extracted O&G in the U.S.

Tertiary (Enhanced) recovery

- Various enhanced recovery methods focused on increasing the O&G's flow characteristics .
- Accounts for about 10% of extracted O&G in the U.S.

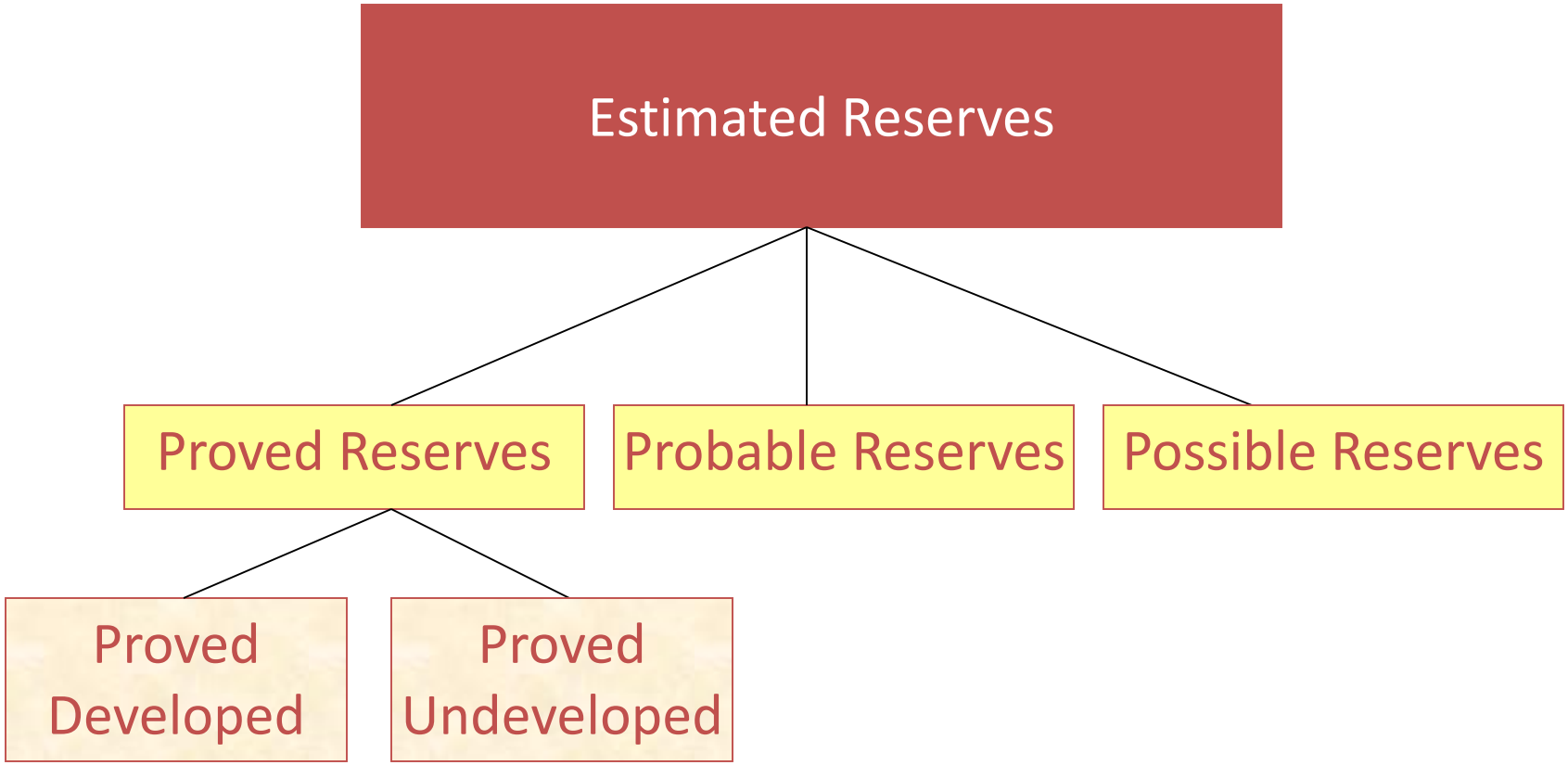
Crude terms

Costs associated with the production phase are interchangeably known as:

- Production costs
- Lifting costs
- Operating costs
- Lease operating (LOE costs)

Reserves – the lifeline of the E&P industry

- Can be classified differently depending, among several other things, on the certainty with which they can be recovered:



Oil & gas industry sectors and players

Proved reserves – we're fishing and the fish is most certainly in our net

- Commercially recoverable under current economic conditions (both in terms of prices and costs) and currently available technology.
- Highly certain to be recovered – must be a 90% chance that actual reserves will be larger than this estimate.

Proved Developed

- Reserves that are expected to be produced from existing wells.
- Can be producing – proved developed producing (PDP).
- Not yet producing – proved developed non-producing (PDNP).

Proved Undeveloped (PUD)

- Reserves that are expected to be produced from new wells.

Reserve talk

- Under U.S. GAAP rules, only proved reserves are allowed to be booked (shown in companies' financials)
- Under international GAAP (IFRS) rules, companies are allowed to book both proved and probable reserves.

Oil & gas industry sectors and players

Probable reserves – we're fishing and we see fish in the water

- Unproved reserves that are likely to be recoverable.
- Should be at least 50% chance of being technically and economically producible.

Possible reserves – we're fishing and we think there is fish in the water

- Estimated to have a significant, but less than 50 percent chance of being technically and economically producible.

More reserve talk

- 1P or P = proved reserves
- 2P = Proved + probable reserves
- 3P = Proved + probable + possible reserves

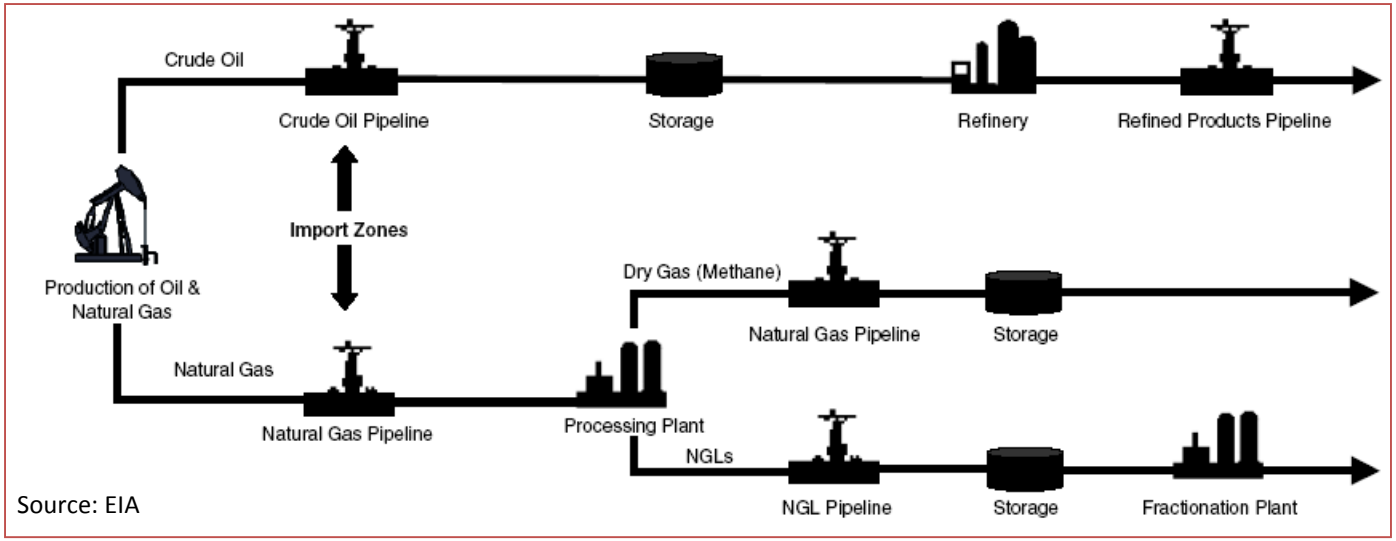
Oil & gas industry sectors and players

Transportation – store and transport

- Involves all operations associated with storing O&G and transporting it from fields to refineries and processing plants.
- O&G can be transported by pipelines, trucks, and oil tankers.
- The sector is typically referred to as midstream, to indicate its role as a connection between E&P and refining and marketing operations.

Major midstream players

- Enterprise Products Partners
- Kinder Morgan
- Northern Border Partners
- Plain All-American Pipeline
- TEPPCO Partners

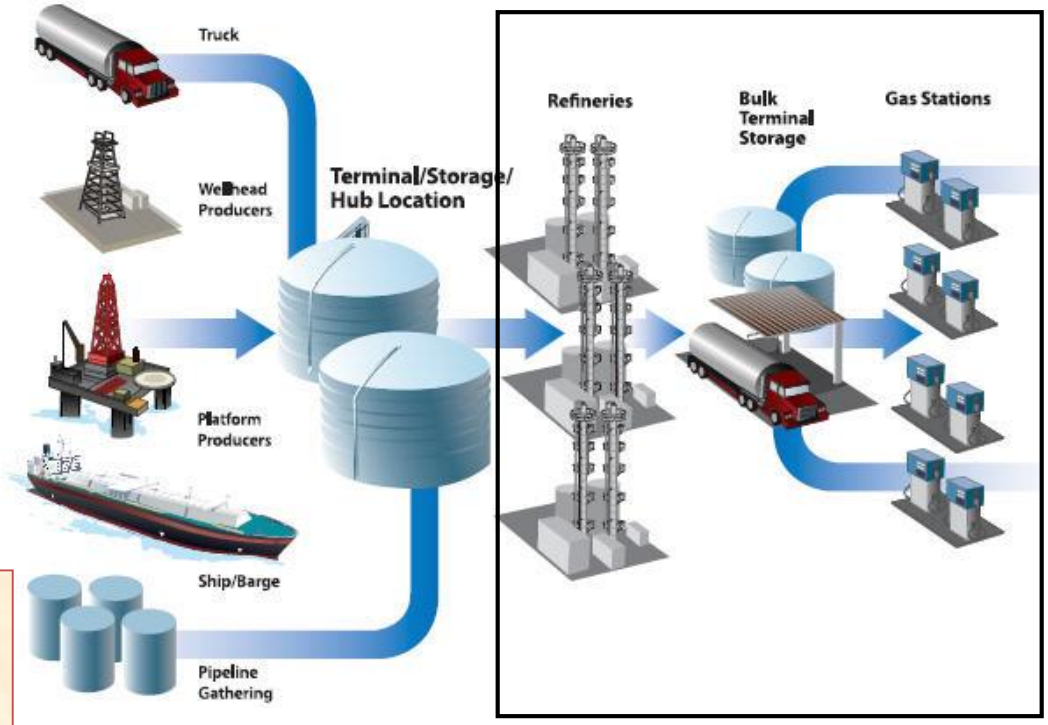


Source: EIA

Oil & gas industry sectors and players

Refining and Marketing – refine and get ready for end-users

- Includes refining crude oil into petroleum products (gasoline, jet fuel, heating oil, diesel, fuel oil, asphalt, etc.) and marketing them to end-users (i.e. through gasoline stations).
- As with its E&P counterpart, the downstream sector can be examined by looking at refining separately from marketing.



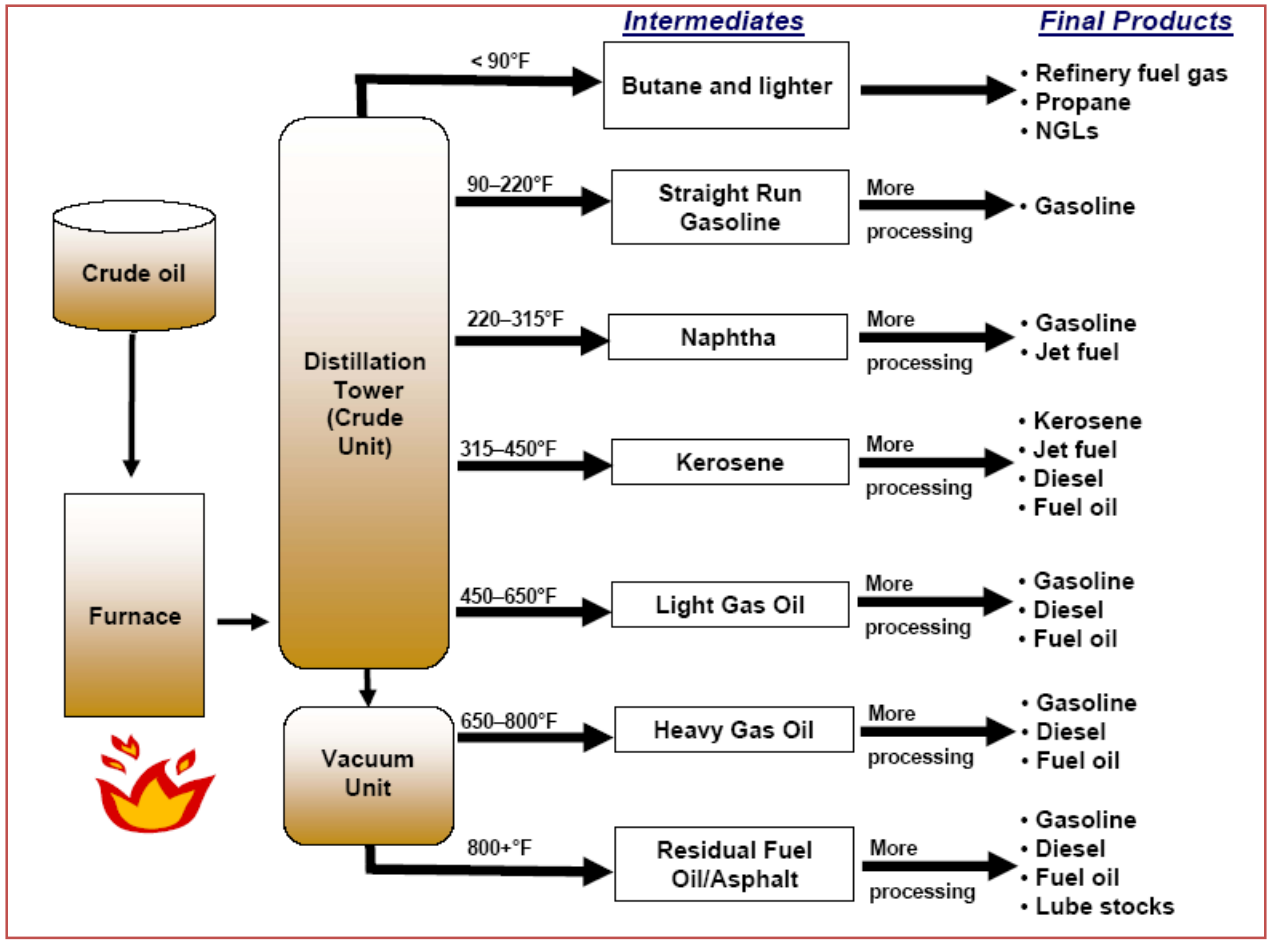
Refining terms

- Refining & Marketing is typically referred by its acronym: R&M
- R&M is also known as the downstream sector, to indicate the delivery of petroleum products to end-users

Oil & gas industry sectors and players

Refining – from crude oil to petroleum products

- Since crude oil cannot be used in its natural unrefined form, it must first be converted (refined) into petroleum products – this is accomplished in processing plants known as refineries.



How are refining profits calculated?

- Refining margins refer to the difference between the price of a petroleum product (output) and raw material costs (feedstocks/input) expressed on a per barrel basis.
- Often based on "benchmark" feedstocks such as WTI.
- Refining margins exist for each petroleum product:
  - Gasoline crack = 1 bbl gasoline – 1 bbl crude oil
  - Heat crack = 1 bbl heating oil – 1 bbl crude oil

Refining terms

Refining profits are interchangeably referred to:

- Indicator margin
- (Margin) differential
- Crack / spread / crack spread

More complex refineries = higher refining margins

- More complex refineries are able to refine cheaper (heavy and/or sour) heavy oil into petroleum products, increasing their profits.
- More complex refineries can change the proportion of petroleum product mix to take advantage of feedstock costs and petroleum product prices.

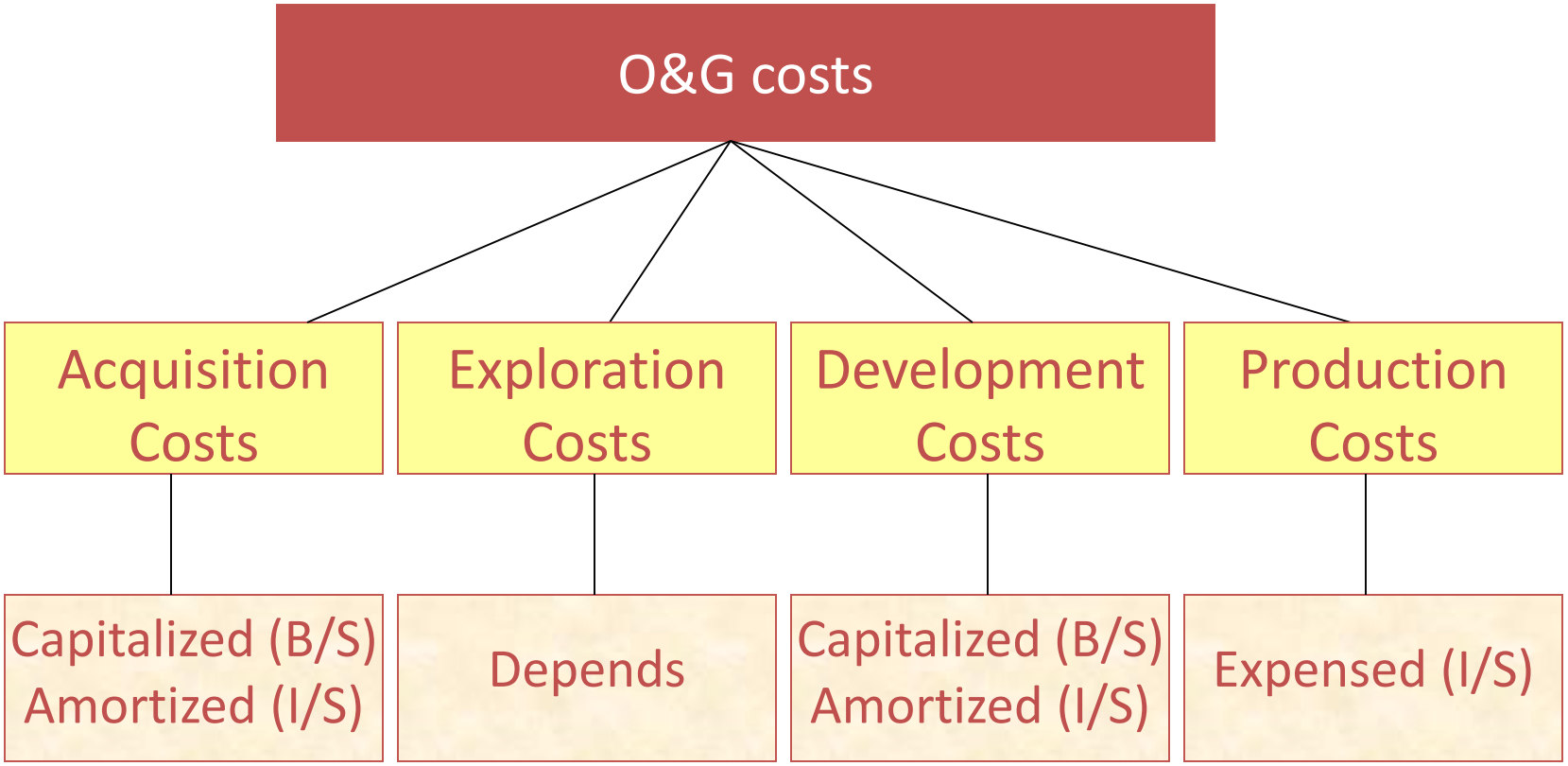
Feedstock / Product Mix	Volume	Unit Price ($/bbl)	Revenue / (Cost)
WTI	100%	$71.00	($71.00)
Gasoline	33%	$90.00	$30.00
Distillate	33%	$85.00	$28.05
Residual	33%	$50.00	$16.50
Revenue			$74.55
Costs			($71.00)
Gross Margin			**$3.55**

Feedstock / Product Mix	Volume	Unit Price ($/bbl)	Revenue / (Cost)
Maya	100%	$64.00	($64.00)
Gasoline	33%	$90.00	$30.00
Distillate	33%	$85.00	$28.05
Residual	33%	$50.00	$16.50
Revenue			$74.55
Costs			($64.00)
Gross Margin			**$10.55**

Oil & gas accounting

Complex topic made more challenging by competing accounting methods

- The challenge stems from treatment of unsuccessful exploration costs



Oil & gas accounting

Different treatments of unsuccessful exploration methods:

Full costs (FC) method

- Allows all exploration results (dry holes and discoveries) to be capitalized (on the balance sheet) and amortized (on the income statement) over the estimated lives of the properties.

Successful efforts (SE) method

- Requires unsuccessful exploration results (dry holes) to be expensed as incurred.
- Only successful exploration wells are capitalized (on the balance) and amortized (on the income statement) over the estimated lives of the properties.

O&G Costs	Successful Efforts	Full Cost
Acquisition costs	**CAPITALIZED**	**Cap**
Geological & geophysical	**Exp**	**Cap**
Exploratory dry hole	**Exp**	**Cap**
Successful exploratory well	Cap	Cap
Development dry hole	Cap	Cap
Successful development well	Cap	Cap
Operating costs	Exp	Exp
Size of cost center	Small	Large
Amortization Cost Center	Single well / field	Company / country

Oil & gas accounting

Depreciation

- A method by which the cost of long-term fixed assets (over 1 year) is spread over a future period (number of years), when these assets are expected to be in service and help generate revenue for a company.
- An allocation of the costs of an original purchase of fixed assets over the estimated useful lives of those fixed assets.

Depletion

- O&G industry specific
- Same concept as depreciation that is applied to mineral resources.

Amortization

- Amortization is the systematic allocation of the cost of acquired intangible assets over a period of time that these assets are expected to be in service and help generate revenue for a company.

All 3 appear on the income statement

- Combined into 1 line item: Depreciation, Depletion, and Amortization (or DD&A).

What's depreciated?

Fixed assets:

- Plants
- Machinery
- Drilling equipment
- Pipelines

What's depleted?

- O&G reserves

What's amortized?

Acquired intangible assets:

- Brand
- Franchise
- Trademarks
- Patents

Oil & gas accounting

Full costs (FC) method

- Requires companies to perform a ceiling test limitation (impairment test) comparing the book value of O&G assets against the SEC value of reserves (market value proxy) that all O&G producing companies must disclose in their footnotes (more on this in the later section).
- If SEC value is lower than the capitalized costs, a write-down is required.
- This is why companies using the FC method utilize large cost centers.

Successful efforts (SE) method

- Companies are not required to perform a ceiling test limitation.
- Write-downs are less frequent than under the SE method, since unsuccessful exploration costs are expensed.

A ceiling test limitation example

- If a company has book value of proved O&G reserves of $200 million and the SEC value of these reserves is $150 million, there would be a $50 million write-down.
- If the SEC value of these reserves is $275 million, there wouldn't be any write-down (a company would have a cost ceiling cushion of $75 million).