Exploration

Technology
Players
Costs

Sarah Jones
Terminology

- Upstream: Exploration and production grouped together as upstream activities
- Wildcat exploration: exploratory drilling
- Appraisal drilling: confirms the amount of oil in a discovered well
- Exploitation drilling: beginning to drain well
- Prospect portfolio: Areas open for exploratory drilling/exploitative drilling
Seismology

- Seismology: shock waves that pass through the Earth and send back waves
  - Measures the speed at which waves travel
- Reflection: travel at different rates depending on type/density of rock through which they pass
- Hydrophones: if waves passing through water
- Seismometers: if passing through land
Seismology cont.

Thunder trucks: create huge waves through the ground
Seismology cont.

- 2D surveying: sound source and detectors moved along straight line; creates vertical cross section by summing compression wave reflections
- Can be land or sea based
Land Based Seismic Surveys

How A Seismic Survey Works

Click Here For Movie
Offshore Seismic Surveys
3D Seismic Imaging

- 3D surveying: sound detectors spread out over an area
- creates a cube of a common depth with improved resolution over 2D
4D Seismic Imaging

► 4D surveying: 3D setup done over two or more time intervals (maps fluid movement)
Reservoir Imaging

- Uses frequency waves to locate reservoirs, estimate volumetric capacity, and monitor ongoing reservoir development.
- Has furthered the exploration of offshore and deep sea oil reservoirs.
Remote Sensing

- Arial photographs taken to map surface features
- Satellite mapping technology
- Locates hydrocarbon traps called:
  - anticlines
  - synclines
  - faults
Major Players

► BP
  ▪ Explorations in 26 countries
  ▪ Industry leading explorer (according to them)

► Amareda Hess
  ▪ $400 million invested in Russia
  ▪ 87 million barrels of proved reserves found

► Conoco Phillips

► Exxon Mobil
Exploration Regions

Worldwide Exploration and Production as of March 31, 2006

- Exploration Only
- Exploration and Production
- Production Only
- Exploration Focus Areas
Costs: Exxon Mobil

- Total capital and exploration expenditures in 2005: $17,669,000,000
  - Includes consolidated and non-consolidated companies in ExxonMobil family

- Operating Costs for exploration: $964,000,000

- Finding and resource acquisition costs were $.43 per oil-equivalent barrel
Proven Reserves

Proved reserves at end 2005
Thousand million barrels

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