

Anadarko

Start →

FROM THE EARTH'S CORE ... TO ENERGY, AND MORE!

Identification of the prospect

- In order to drill for oil or gas a geologist or exploration department locates a geologically attractive area to explore.
- One of the tools used to evaluate a “prospective area is seismic.
 - In the “old days” dynamite charges were used to “sound out zones.
 - Today more modern methods are used.

Acquiring Seismic Data

ACQUIRE SEISMIC DATA



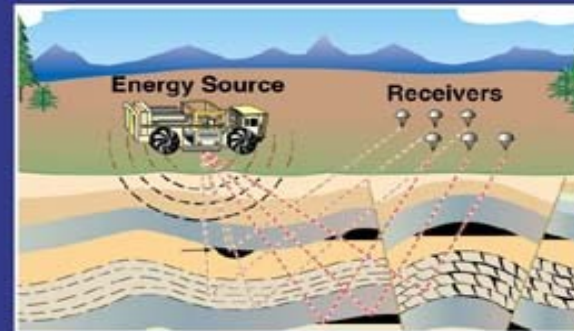
Project Design and Contractor Selection



Regulatory Considerations and Landowner Permitting



Preliminary Field Work

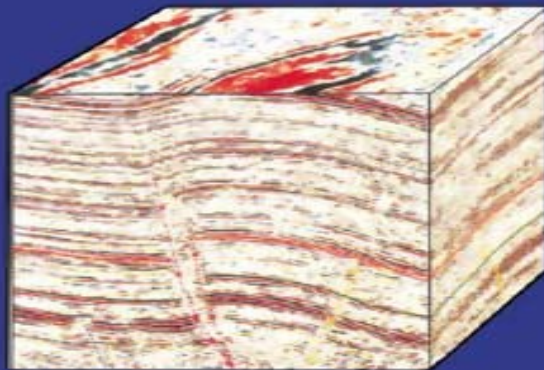
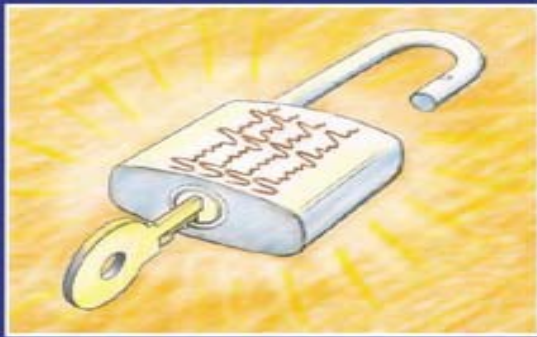


Generating Energy Waves and Recording Data

How Much Will It Cost?

Interpreting Seismic Data

INTERPRET SEISMIC DATA

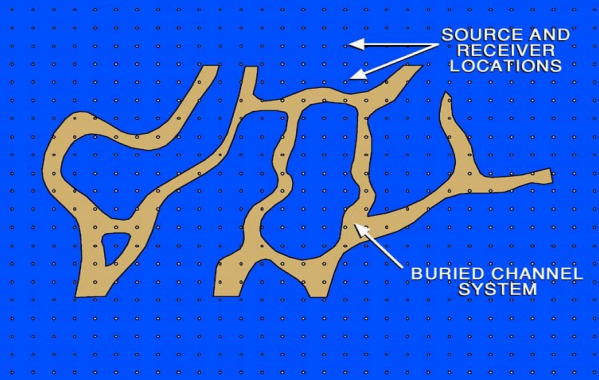


Interpreting Tasks

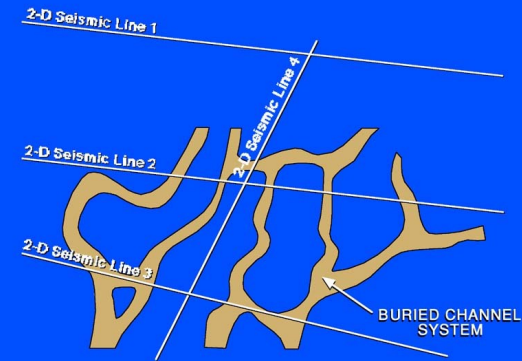
- Assemble and load **well data, culture (land boundaries) and seismic** from processing into a **computer workstation**.
- On the workstation, **locate faults and incorporate well control to identify key reflecting horizons**.
- 2-D vs. 3-D images of the **sub-surface**.
- Construct maps of **prospective areas (prospects)**.
- Peer review **and economic analysis to determine risk**.

Difference in 3-D and 2-D Seismic

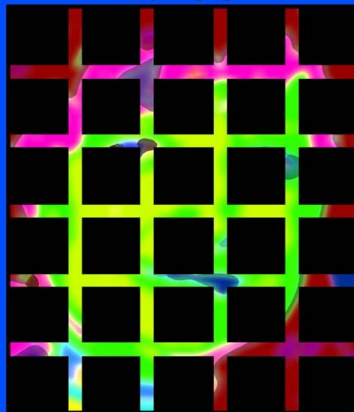
Exploring With 3-D Seismic Data



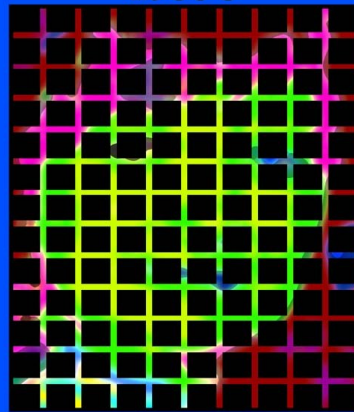
Exploring With 2-D Seismic Data



1970's



1980's



1990's



Where to drill a well is an educated guessing game

- The economics of a potential prospect must be stringently evaluated.
- 7 out of 8 Wildcats are dry. A **wildcat** is a well drilled outside a known producing area.
- Management and potential investor must feel that there will be a reasonable rate of recovery for the funds to be expended for exploiting the minerals.

Lease Acquisition

LAND ACQUISITION PROCESS

1



The Technical Team Identifies a Buy-Area and Generates an Acquisition AFE

2



The Landman Enlists a Land Broker to Obtain Mineral Rights

3



The Land Broker Investigates Mineral Ownership

4



The Land Broker Negotiates Leases with Mineral Owners and Issues Drafts

5



The Land Broker Mails Completed Lease Packet to Land Operations

6



Obligations Receives Deposited Drafts From Bank and Pays Drafts Due

7



Land Operations Gathers Lease Packets and Approves Drafts

8



Land Administration Assigns Lease Number and Schedules Delay Rental Payments

Lease Maintenance

- Leases can be maintained by making a payment...no payment no lease:
 - Bonus
 - Delay Rental
 - Shut-in
 - Royalty
- If all leases have not been drilled, F/O or drilled by another company the Land & Exploration department must determine if drilling should be started before the leases expire or if the leases should be dropped with no additional expenditures.
- One of the most important functions of a Lease Records Dept is to see all leases and assignments are recorded and that all contractual agreements correctly state the intent of the parties.

Negotiating the operating agreement

- If the prospect is to be pursued and there is another leaseholder, they may be approached to join in the drilling of the prospect or to Farmout.
- Landman tries to negotiate the best JOA
- JOA dictates the procedures for all operations of the well from the time of full execution
- AFE (Authorization for Expenditures) Each partner signs and AFE with commits his company to the payment of the estimated expense sent out on the document. If more expenses are incurred the operator must get a supplement to the AFE.

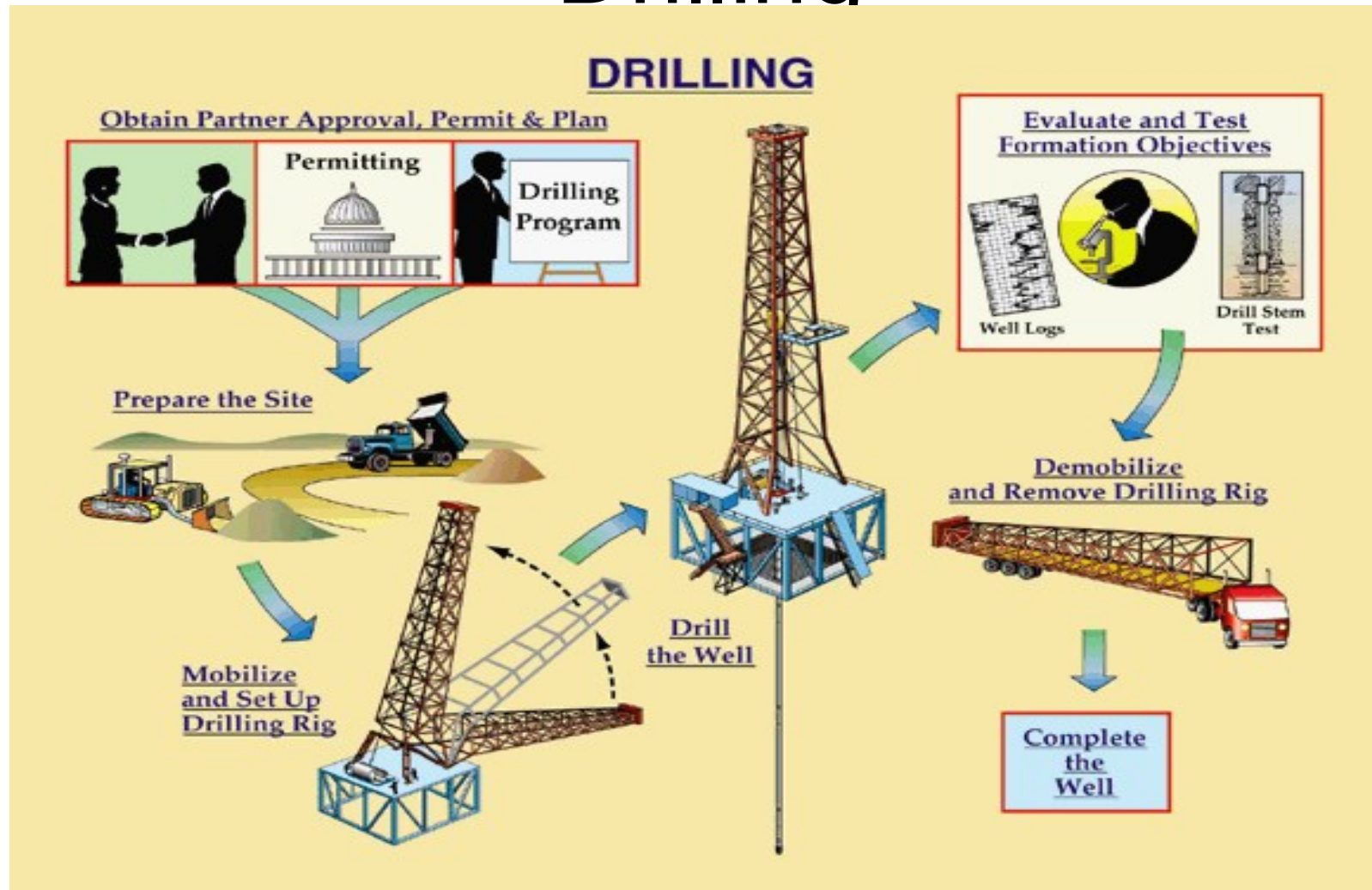
Drillsite Title

- Prior to drilling a Drilling Title Opinion is obtained from a title attorney experienced with the area of the proposed well. Courthouse records are reviewed or abstracts are obtained to:
 - Correct the ownership of the surface and the minerals
 - Ensure all prior leases are invalid
 - Determine the ownership of the operating rights for the minerals to be certain the well is being drilled on a valid lease.
- Note: If a well is drilled in the wrong place (unleased or owned by a different company) or to an unleased zone (or zone not covered by the lease) the well becomes the property of the owner of record and the monies expended are generally not recovered.

Types of Ownership

- Royalty Interest (RI) (mineral owner - often the Lessor) interest in production derived from royalty clause in the oil and gas lease.
- Overriding Royalty Interest (ORI) – the owner has a beneficial interest in the value of the production, which has been assigned to them by a lessee or reserved by them in an assignment to another party.
- Working Interest (WI) a lessee who shares in all costs and is burdened by all royalties and other leasehold costs associated to his interest.

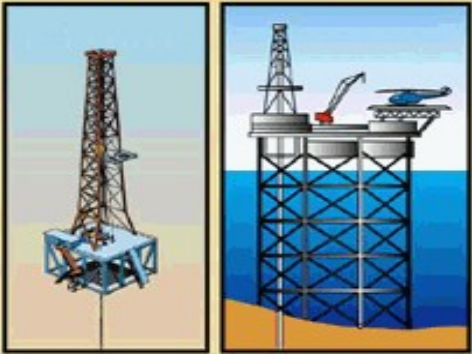
Drilling



Drill the Well

DRILL THE WELL

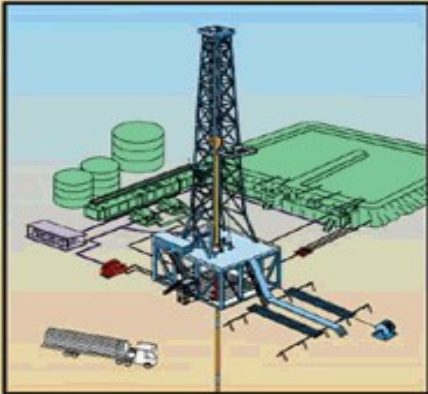
Types of Drilling Rigs



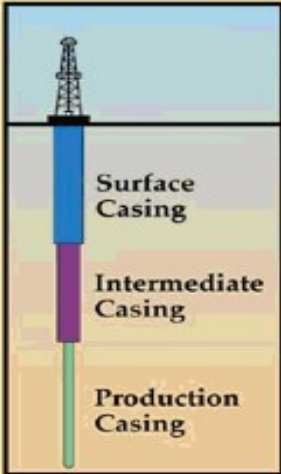
Land Rigs

Offshore Rigs

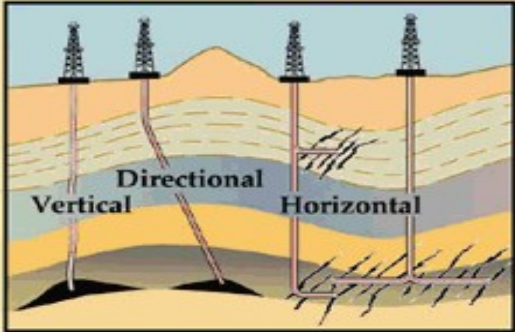
The Rig and its Component Systems



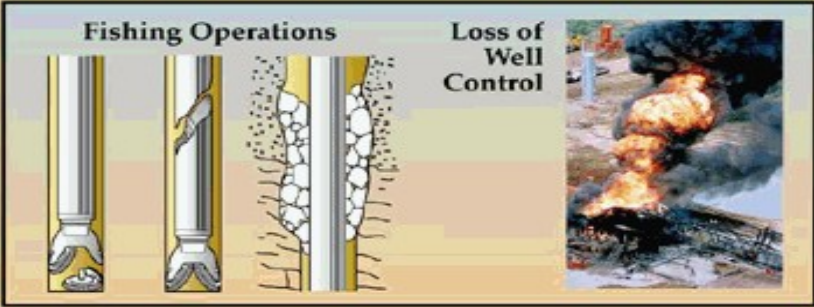
3 Stages of Drilling



Methods of Drilling

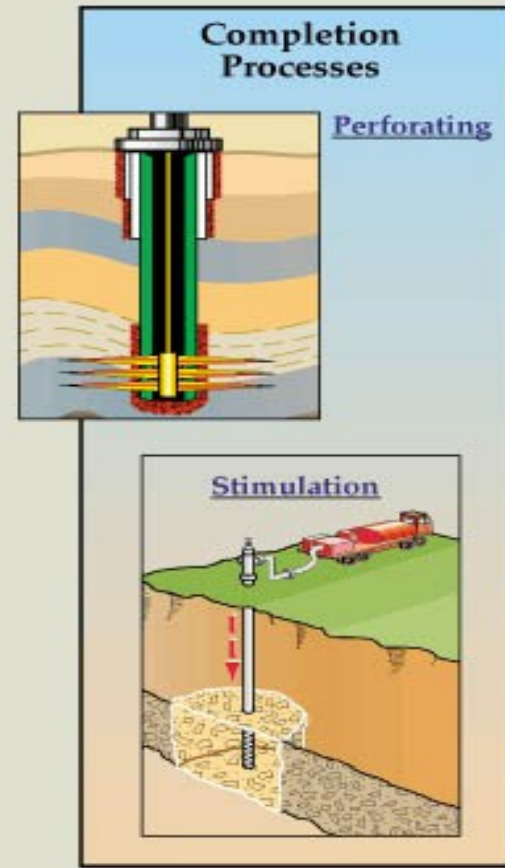
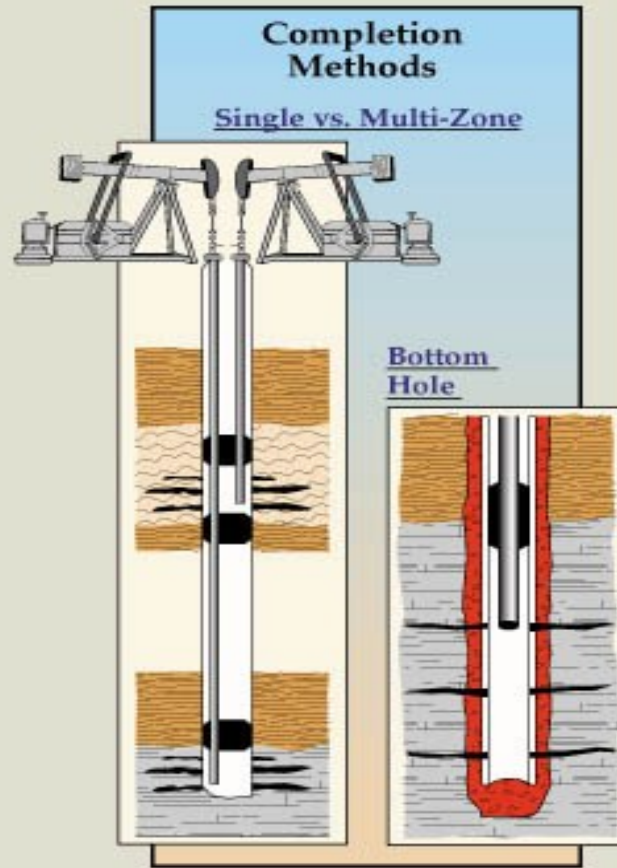
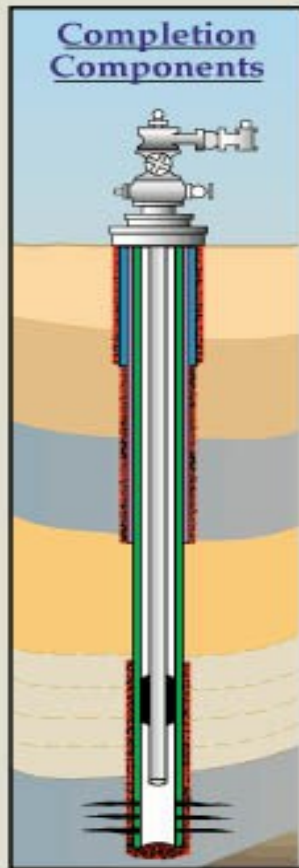


Drilling Problems

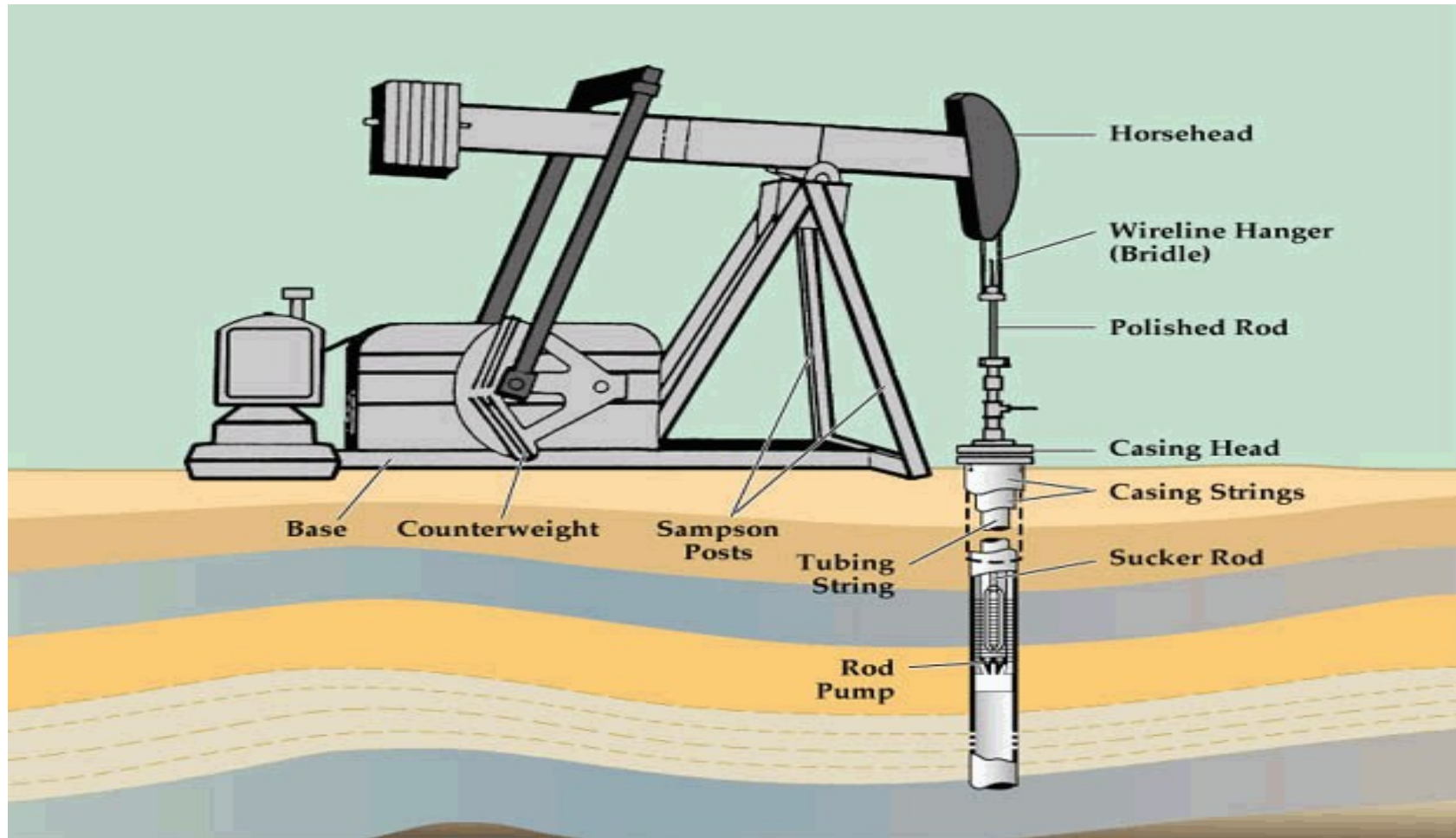


Completion

COMPLETE THE WELL



Some Equipment used in the field



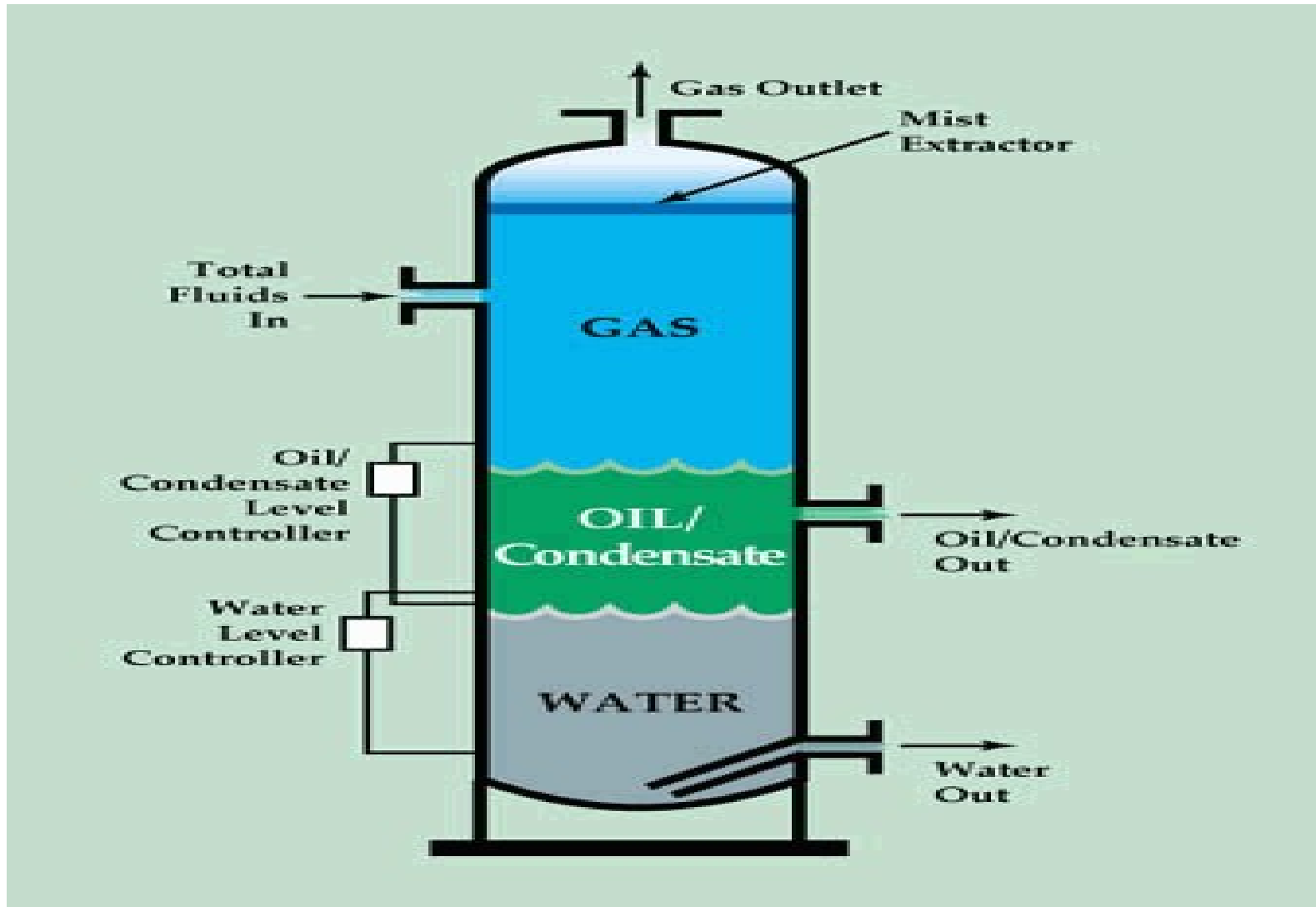


Vertical Separator



Horizontal Separator

Diagram of Separator



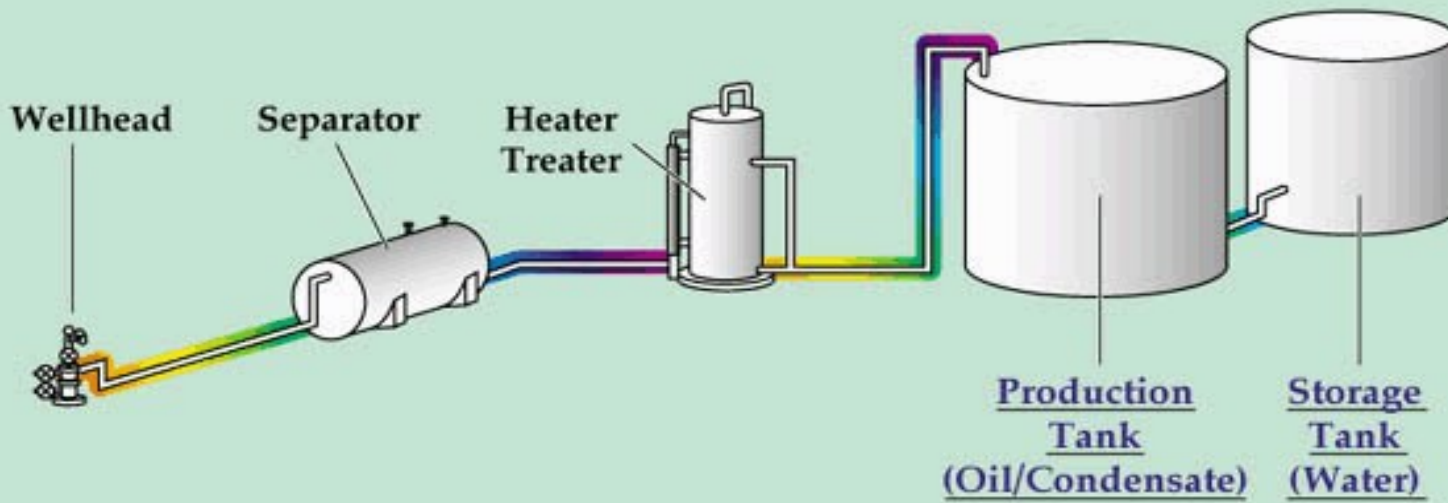
Storage tanks



**Oil/Condensate
Tank**

**Water
Tank**

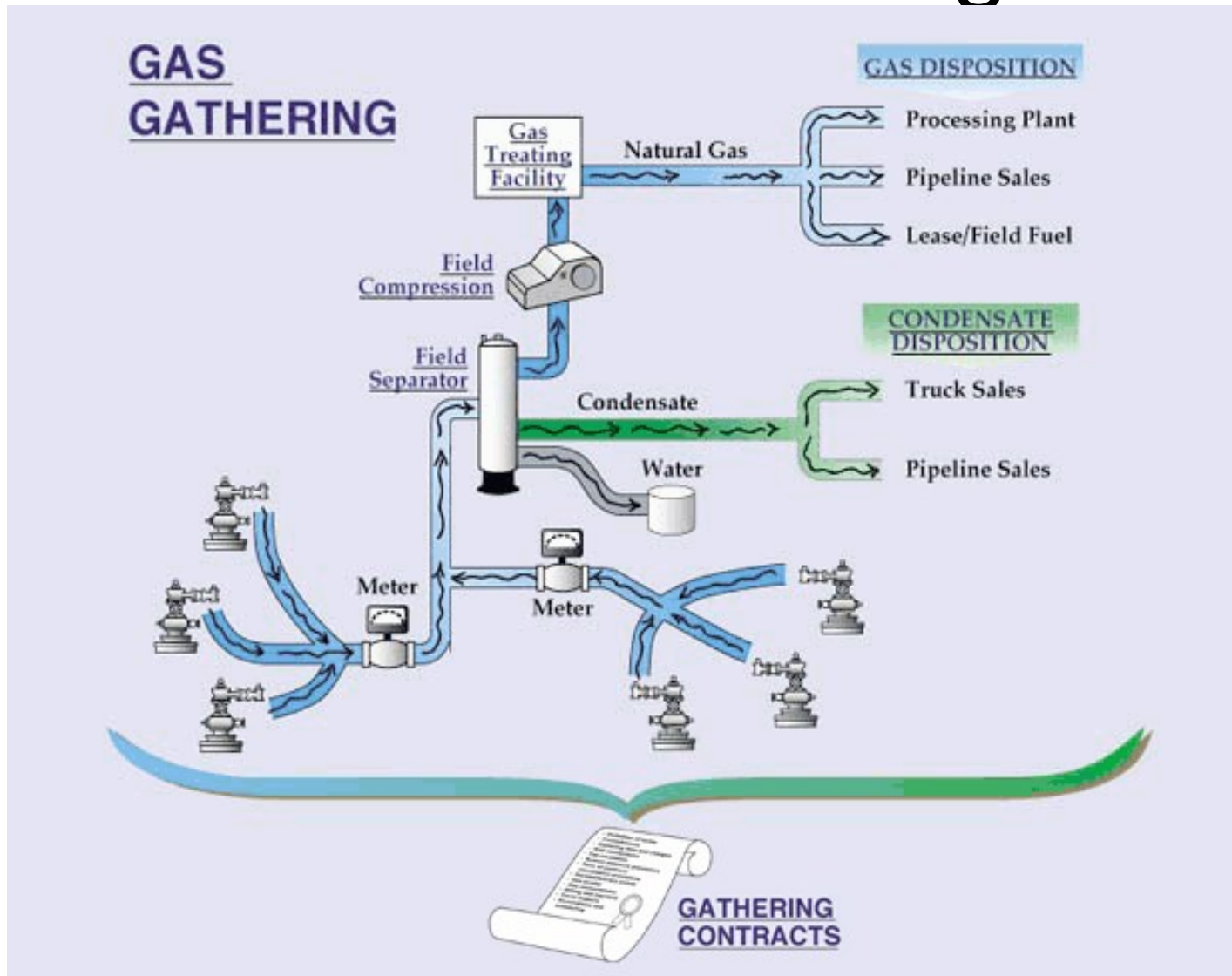
Product Storage

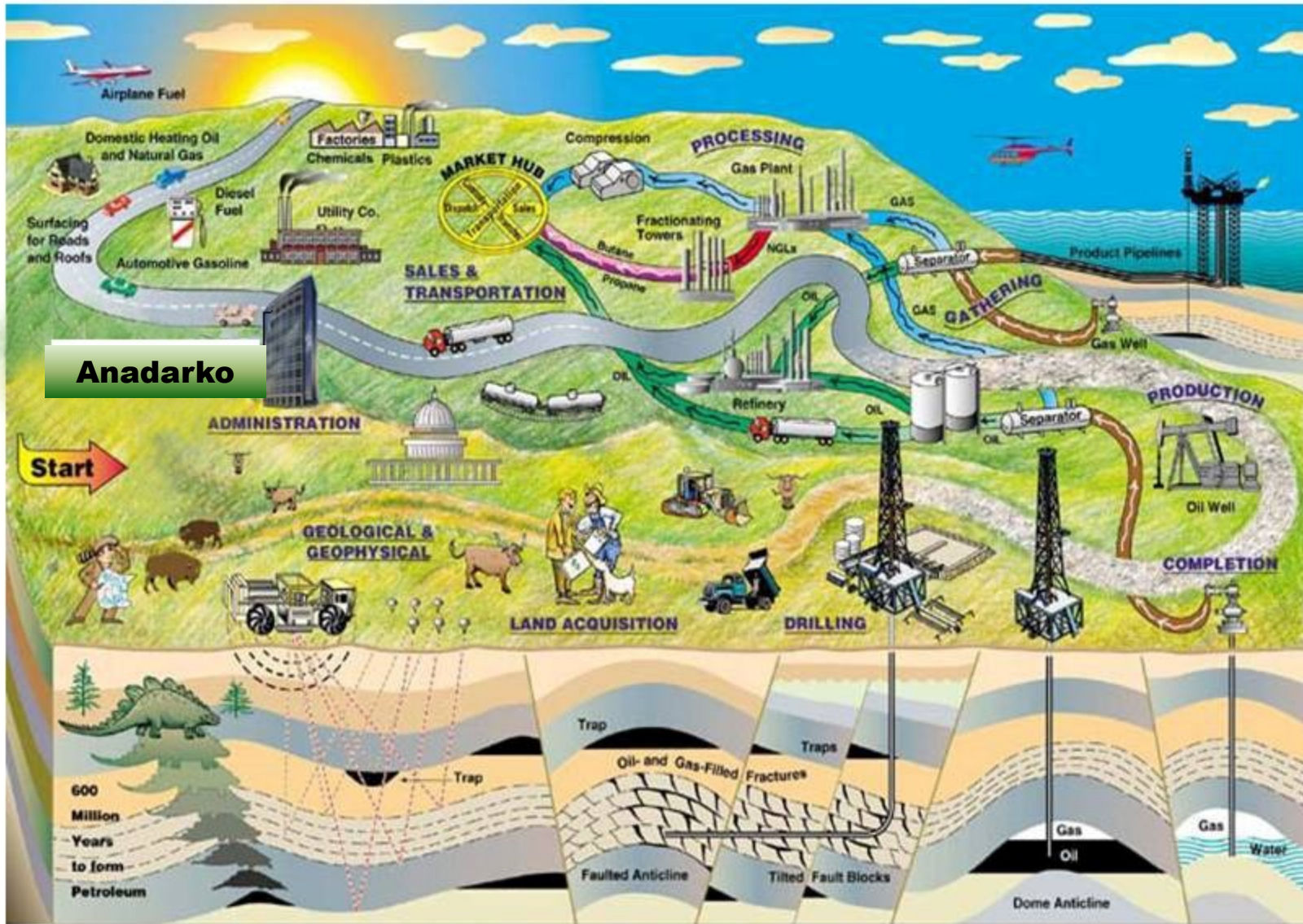


PRODUCTS PRODUCED FROM A WELL

- Oil – liquids produced from an oil formation
- Condensate – is the liquid produced from with natural gas from a gas formation
- Gas - is the natural gas produced from a gas formation
- Casinghead Gas – is gas produced from an oil well or an oil formation

Gas Gathering





FROM THE EARTH'S CORE ... TO ENERGY, AND MORE!

Oil Sales

- Oil can be transported by truck or pipeline to a refinery
- Then the oil is processed into products to be used by the consumer (Gasoline, Lubricants, etc.)

Gas Sales

- **Once the gas has been treated, several scenarios can occur at this point in the process:**
 - The gas stream may be sold to a pipeline/transporter or another party
 - Transported to a gas processing plant
 - Returned, in part, to the lease or field for fuel to operate compressors

Division Order Title

- When a well completes the Division Order Analyst orders a Division Order title opinion (usually from the same attorney who prepared the Drillsite Opinion) or updates the title from the original Title Opinion.
- Drilling Title Opinion is concerned with drillsite ownership, operating rights and correct location, while the Division Order Title Opinion details each owner and its exact interest in the production. All clouds or questions about the tile are set out with requirement to be satisfied to ensure the proper payment and correct fractions.
- Once the Division Order Title Opinion is received the Division Order Analyst reviews the opinion for errors.

Division Orders

- Once the Division Order Analyst has reviewed the Division Order Title Opinion and he/she cures requires or some requirements are considered business risks and may be waived.
- A document called a Division Order is created it contains clauses and the ownership for the property. DO is mailed out and to be executed.
- At the same time a Division Of Interest is created reflecting the decimal ownership in the well.
- This Division Of Interest also indicates if the owner should be placed in pay status or if his revenue payments should be suspended.
- A Division Order contains the following Information:
 - owners agreement to the interest shown,
 - Tax Identification Number (Social Security Number)
 - Verification of address.

Joint Interest Billing

- If there are partners in the well, a Billing Ownership Deck is created for Joint Interest Accounting (JIB).
- Bills for drilling and operating costs are sent to the partners in accordance with the Joint Operating Agreement.

Revenue Accounting

- Divisions of Interest showing all owners who share the proceeds are sent to Revenue Accounting
- When Oil & Gas sales contracts are completed and the well begins to produce, the purchasers remit monthly payments.
 - The Revenue Accountant must verify that payment is received and that the values are correct according to the contracts.
 - Then the revenue must be posted on a Division Of Interest.

Revenue Accounting Con't

- When the revenues are released to the owner monthly checks are mailed for production to each owner until notified of change of ownership
- The accounting dept is also responsible for payment of taxes, state and federal royalty payments, and completing the associated forms.

Other Operator Accounting Functions

- Payouts:
 - Farm Outs
 - Non-consents
- Monitor and change interests
- Gas Balancing
- Property taxes
- State and Federal Audits.

Production Department

- Responsible for all phases of maintaining the well in producing condition
 - Regulatory reporting (Depth, location, production, etc.)
 - Contract services for analysis, capacity and meter calibrations.
 - Reading of gas meters and stock tank volumes
 - Major expenditures to correct a well problem (AFE election)

Secondary Recovery

- At the end of the life of the well if it is an oil well secondary recovery is possible.
 - Must decide if the potential production will be greater than the cost of secondary recovery.
- A secondary recover unit will require a unit agreement executed by most of the owners.
- A secondary recovery unit can extend the life of the field for 10-20 years.
- If no secondary recovery is possible the well is plugged.

Plugging

- When a well has been depleted the producing formation or formations must be plugged to protect the environment
- Plugging notices must be filed with the state