

# Natural Gas and Oil



# **OIL & GAS COMPANIES AND** **BOTTOM LINE & CULTURE**

- Most companies raise capital some way, shape or form to provide income based on the sale of oil, natural gas or liquids.
- Income is derived from the cost of doing business in this case, the cost of exploration & drilling & producing a well. This cost is usually expressed in the cost per Mcf of gas or gas equivalent of liquids.
- Ex. \$1.00 per Mcf cost of exploration, drilling and production is subtracted from the income derived from the sale of gas, \$4.00 per Mcf.



- Operating companies like Range, Chevron, etc. usually have a leasing and drilling budget that they have to maintain.
- They usually don't exceed their leasing budget expenses so their drilling would be compromised.
- Ultimately if the prices of oil & nat.gas are low, companies normally don't drill and sit on production they currently have.

# Vendors



- Companies are very loyal to the vendors and service companies that they have known and done business with for years.
- It's a very tight fraternity and its real tough to break into their market... You just have to keep trying and offering incentives, etc.
- In order to get in the door, you definitely have to have a **GREAT SAFETY RECORD!** Low OSHA reportable incidences.

# UPSTREAM, MIDSTREAM & DOWNSTREAM COMPANIES...What's the difference??

## UPSTREAM:



Upstream means everything that happens at the well location, land, geology, drilling & production from the well pad.

Examples of companies: Range, Chesapeake, Anadarko Petroleum.

# MID-STREAM:

Mid-Stream is a term in the oil & gas industry that defines the pipelines and facilities like compression and stripping facilities, refineries that take the gas and or liquids to the marketing or sales point from the field.

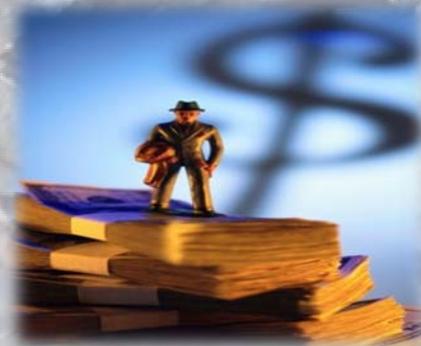
Examples of companies: Williams, MarkWest, PennVirginia



# DOWNSTREAM

Down Stream is a term in the business to define the actual sales of the product, oil & gas and liquids through the pipeline to the utility company or LDC, Local Distribution Company

Examples of companies: Columbia Gas, El Paso, Dominion.



# 3 in 1

It's rare but some companies can actually be all three in one entity. Upstream, Midstream and Downstream or have subsidiaries....

Equitable

Dominion

Columbia Gas



# **GAS PROCESSING OR STRIPPING FACILITIES** **REFINING NAT. GAS INVOLVES CHILLING IT!**

- ❖ Natural Gas is composed of from 80% to 98% methane, it also contains various percentages of ethane, propane, butane, pentane.
- ❖ When the percentage of the ethane & propane (the natural gas liquids are high) these elements must be stripped out of the gas stream when selling methane gas to a designated pipeline utility.
- ❖ This is accomplished simplistically by cooling nat.gas to -200 deg F. The liquid components ethane, propane will fall out & can be collected separately & sold.



# REFINING HYDROCARBON LIQUIDS

## INVOLVES HEATING IT!!!

*Hydrocarbon cracking is the process of breaking long-chain hydrocarbons into short ones*

When heated above 1000 deg. F, the light hydrocarbon feeds such as ethane, LPGs or light naphtha give product streams rich in the lighter alkenes, including ethylene, propylene **(PLASTICS)**.

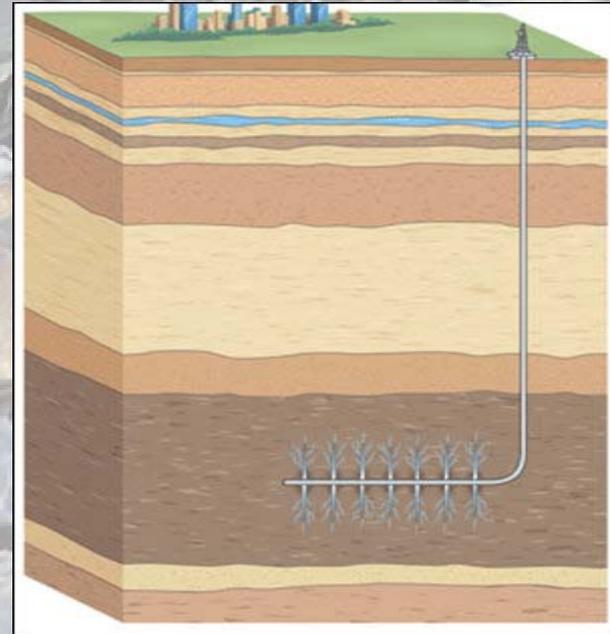
Heavier hydrocarbon (full range and heavy naphthas as well as other refinery products) feeds give some of these, but also give products rich in aromatic hydrocarbons and hydrocarbons suitable for inclusion in **gasoline or fuel oil.**



# MANY SERVICE COMPANIES ARE NEEDED IN THE WHOLE PROCESS OF EXPLORATION, DRILLING & PRODUCTION OF OIL & GAS

## *Exploration & Geological Analysis:*

Dawson Geophysical  
Schlumberger  
Baker Hughes  
Weatherford  
Halliburton



**Well pad location & lease access road  
construction companies:**

Walsh Construction

Richey Oilfield Construction

Glenn O. Hawbaker, Inc.

Various other smaller local companies...



## **Drilling companies in Appalachia:**

Patterson UTI  
Nabors Drilling  
Nomac Drilling  
Union Drilling  
Falcon Drilling  
Whipstock



**PERFORATION COMPANIES:**

Halliburton

Weatherford

Renegade

Gray Wireline



**FRAC SERVICE COMPANIES:**

Universal Well Service

Halliburton

Weatherford

Frac Tech

Trican

Calfrac, Pumpco



Companies involved in reclaim of land will normally be the same as the company that constructed the location.

**Companies that set production equipment & provide roustabout services:**

Green Roustabout Services

GFS

Richey Oilfield Service (ROC)



# WELL PRODUCTION ELECTRONICS

All wells & pipelines & meter locations are monitored by broadband internet telemetry.

Companies can monitor, increase flow rates & be notified of problems in the field by this technology.

One of the major companies working in this field for the oil & gas business is:

Grace Automation



# FABRICATORS OF OILFIELD EQUIPMENT

In Appalachia:

Pride of the Hills. Big Prairie, Ohio

American Pressure Vessel Co.(A  
Westerman Co.) Bremen, Ohio

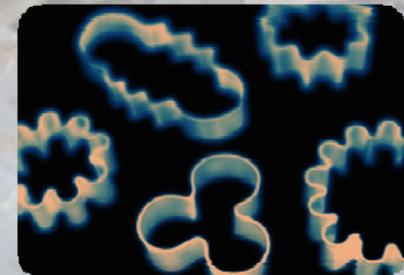
Cameron Valves. Pennsylvania, Houston, TX



This maybe a market if you own a fab shop that you could break in the business locally.

A lot of the equipment must meet oilfield specs on pressure & safety standards and companies like a “cookie cutter” approach to setting up their locations all the same.

A plug and play approach.....



# OILFIELD PARTS & SUPPLIES

➤ A lot of service companies have to go outside the area for the parts they need for their equipment. The major suppliers are from Texas and Oklahoma.



➤ Some service companies have expressed desires for local companies to manufacture fittings, valves they need for their operations. Isn't happening right now.



➤ Need to get with the service companies frac, flowback, to get the desired specs. (Universal Well Service, Halliburton)

# SUPPLYING FOOD, HOUSING, CLEANING SERVICES TO THE OILFIELD WORKERS



In the immediate future yes there will be a need with the transient workforce coming in from out West. In the longer term when more workers are hired in PA, OH, etc...No it won't be needed because they will all live at home.



Right now, services needed are commercial laundry & cleaning of office and living quarters on rig locations and in the community.



# Workers Needs

Right now in Washington Co., PA and other areas some companies or individuals are providing not only laundry and cleaning services to the workers but actually shopping for groceries when they are away on days off or at work.

Just something they don't have to worry about and can be handled by a service company.





- Catering services are a big deal on a well location especially during the frac jobs.
- There are more individuals on location during these events and work at minimum 12 hr. shifts without leaving the location.
- They provide 3 meals a day for as many days that they need to during the frac jobs. Two days to twelve....Then they move onto the next job site.
- These catering services must carry liability insurance in case there are any issues with food poisoning, etc., as well as the safety issues.



In some areas where drilling is taking place in PA there are food service vans that are traveling around the countryside providing “curbside” food-coffee, sandwiches, soft drinks and incidentals like smokeless tobacco products for the workers.



You obviously have to get the appropriate permits in the towns you would be operating in to do this like anything else....

# ORGANIZATIONAL CHART OF AN OIL & GAS COMPANY

Depending on the size of the company, the local operations office of a company is managed by usually the Vice President of Operations. Everything goes through this position. The various depts. are as follows:

- Drilling
- Engineering: Completions & Reservoir
- Environmental & Regulatory: Civil/Environmental Engineering and staff.
- Exploration & Geology
- Midstream or Production Engineering





- GIS Dept.: Geographic Information Systems: Mapping.
- IT Dept: Computer systems
- Gas Measurement Dept.: (Field Telemetry & Royalty meters.)
- Human Resources
- Environmental, Health & Safety (EHS)
- Government/Public Relations.
- Production Dept.: Includes lease operators or well tenders, roustabouts.
- Land Dept: Includes agents & title attorneys.



Within the Land Dept. it is broke down into Leasing and Operations.

The leasing group obviously is involved in leasing ground to drill on.

The operations side of land is involved in obtaining pipeline rights of way for gas, water, roads and facilities.



## -Gas Marketing & Corporate Business:

This dept. handles the selling of the product, the natural gas and or liquids. They are responsible for any end user accounts, businesses to sell local gas to and to the various pipeline downstream companies.

Any new ventures the company may get into like CNG or facilities.



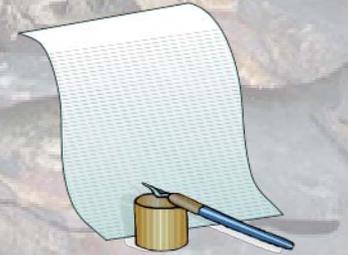
The big thing to remember with most if not all E & P companies like Range, Chevron, etc. is that they don't normally own any equipment to do what they need done in their business....

They don't own the drilling rigs, frac equipment, bull dozers or water trucks...this is all owned by other parties or contractors.



They are like the General Contractor on a construction site!

# THE OIL & GAS LEASE

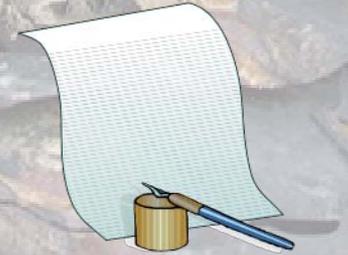


## *What to give and not give away in a “typical lease.”*

-When leasing your rights, it is definitely better to form landowner groups to combine you and your neighbors lands together in large blocks.

This will give you all a better negotiating stance with the company.. There is strength in numbers and it will allow more people to look at what the best deal is for the whole group. You may miss something doing this all on your own.

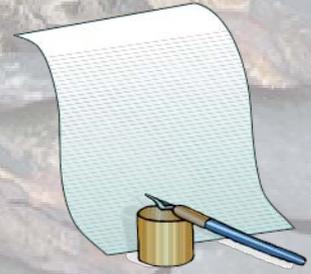
# Leasing cont.



-An important consideration in leasing is to figure out what rock formations the companies want to drill and produce. Shallow traditional sandstone or shale formations....it makes a big difference.

For example you can give them the right only to the “marcellus shale” and no other formations or to the “utica shale. Leaving the other formations open to a separate negotiation. This maybe a tough pill to swallow for most companies and they may just offer you more money and royalty percentage to have these other formations included in the lease. That’s a win as well.

# Leasing cont



-When leasing your rights the company will give you some up front or lease bonus money. Try to get this money when you actually sign the lease.

In certain areas where a lot of shale drilling has taken place you can expect anywhere from \$3,000 to \$5,000 per acre.

When the well is turned on line into production you can expect a royalty check based on a percentage from 15% to 20% of the gross revenue from the well. These checks will come monthly until the end of the life of a well, possibly 40 to 50 years.

# Royalty



The royalty checks will obviously be rather large at first because you will get the flush production from the well. Production is normally half what it starts at after a year online.

You are paid a royalty percentage based on what your acreage contributes to the whole drilling unit.

Most shale units are running from 640 acres minimum to 1280 acres. This is because the horizontal laterals are from 3000 ft. to over 6000 ft. in length.

# Know your Rights



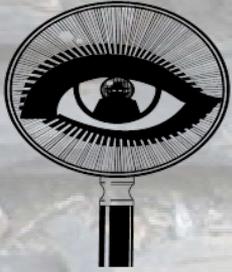
-Only give the company the right to lease your oil & gas rights in the lease.

Don't give them any other rights to set compressor stations or to place pipeline rights of way from other wells across your property without a separate agreement.

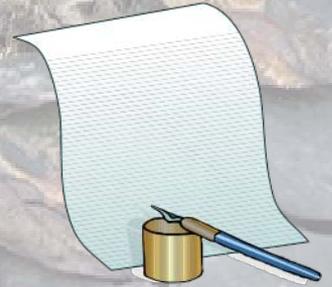
You will lose money and opportunity giving all this away in a single lease document.

Make sure you have some say on where production equipment is set and roads, etc.





# Read Carefully



-Finally make sure there is no automatic extension of lease clause in your contract.

You want to be able to renegotiate another new contract at different rates and terms from the old one if there are better deals to be had out there with the original company or another at your choosing.

## Jobs & Careers

Penn State's study a few years ago indicated that there are approx. 400 individuals in 150 different career paths associated with one Marcellus Shale Well... Here are some of those career paths:

### **College Degree Positions:**

- Petroleum, Civil, Environmental, Mechanical Engineering.
- Geology
- GIS
- IT



- EHS: Environmental, Health & Safety
- Human Resources (HR)
- Public Relations (PR)
- Accounting
- Paralegal
- Oil & Gas Law (Title & Environmental)
- Environmental Science



**NOTE: ANY OF THE ABOVE DEGREE PROGRAMS  
NEED AN INTERNSHIP WITH AN OIL & GAS COMPANY  
IN ORDER TO BE HIRED!**

**75% of oilfield workforce is “Blue Collar”**  
**(Shorter term technical training.)**

- Lease Operator or Well Tender
- Roustabout
- Frac & Cement Service Co. Operator
- Water Truck Haulers
- Drilling Rig Crew
- Wireline Operators...Cased & Open Hole
- Coiled Tubing Operators



- Heavy equipment operators
- Crane, hoist & boom operators
- Landscapers
- Surveyors
- Water test technicians
- Well test & flowback technicians
- Valve technicians
- Water transfer personnel





# TECHNOLOGY NEEDS



With the advent of everything going greener in the oil & gas business any technology which serves to make the surface, environmental impact better is needed.

Something that has been thought of but not yet implemented is to have the drilling rigs running on CNG or LNG instead of diesel fuel. They could hook up to existing pipelines in the work area.

As well as all oilfield service company fleets and company trucks.



# Reuse Recycle



- Finding a better way to treat and re-use water in the whole process is always a needed factor.
- Using alternative sources to water for fracturing like Nitrogen or Propane.
- There are always needs on the drilling side to being able to “make a hole” faster, safer, more efficient. Better drill bits, mud systems..
- Making all waste generated, recycleable!