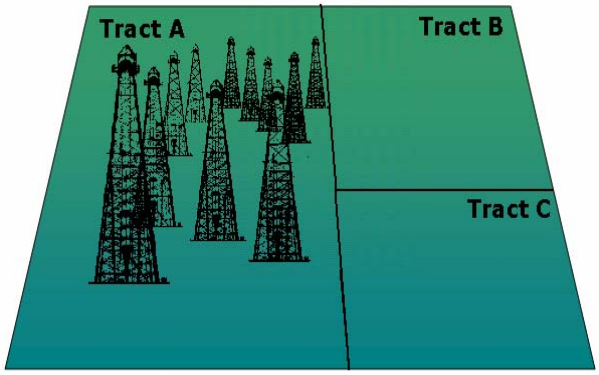
Chapter 7 - Pooling and Unitization

Pooling

The birth of the modern oil and gas industry took place in and around 1908. By the 1920's, large oil fields existed in states like Texas, Oklahoma and California. With no government regulations in place to oversee this industry, wells were, in many cases, separated by only 10 feet. Drilling multiple wells on the same tract of land was common place. The result, in many cases, was loss of pressure from the reservoirs and the abandonment of the fields with only 1/3rd of the oil recovered.

This type of drilling was promoted with the philosophy, "Pump as much oil out of the ground as fast as you can before someone else drills on an adjacent tract of land and beats you to the punch!"



As can be seen in the illustration, there was no limit on the number of wells that could be drilled or no distance regulation from fence lines. Capturing the oil became a contest between who could drill fastest and recover the most. Such drilling, however, posed several problems that needed correcting.

The drilling did not concern itself with any type of orderly and efficient development of the resources. Consequently, geologic structures were often damaged. The reserves were not developed in any way that would maximize the ultimate recovery and such drilling failed to protect the rights of mineral owners, compensating them for their fair and just share of the production.

Between the 1880's and 1930's, the following characteristics were true of oil discoveries:

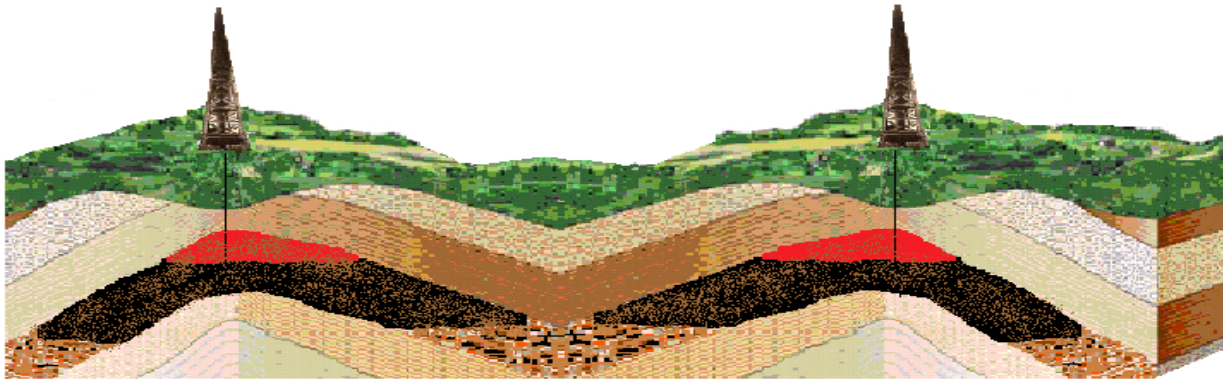
1. There were no restrictions on the amount of production taken from an individual well
2. Wells could be located next to each other without any spacing requirements
3. Environmental waste was prevalent
4. The loss of reservoir pressure was prevalent
5. Nearly 75% of all oil was still left in the ground
6. Drainage for neighboring tracts of land

The Beginning of Pooling - The Strake No 1 Well

Then, in 1931, a huge tract of 9,300 acres was leased by George W. Strake in Conroe, Texas. The discovery well, (Strake #1) under tremendous pressure, spewed millions of cubic feet of gas and hundreds of barrels of condensate every day. As George Strake began to slowly and methodically drill other wells in the field, observers noticed that the pressure causing the spray began to level off which, in turn, promoted level production from the wells. Humble Oil, the lessee on an adjoining tract of land, entered into a joint endeavor with Strake. Together, they began developing the area in a methodical effort. This was perhaps the first picture of modern day pooling in the United States. As a result, the Conroe field is still producing today.

Defining a "Pool"

Most regulatory agencies define a "pool" as an interconnected subsurface reservoir of oil, natural gas or both. As seen in the illustration, even though the two reservoirs are found in a common geologic structure, they would be considered two separate reservoir pools because each are isolated from one another by impermeable rock. Separately, each pool is interconnected by permeable rock and each contains its own separate pressure communication.



Defining “Pooling”

Most regulatory agencies would define “pooling” as the combining of leases together in order to develop a field from a common reservoir. Often smaller tracts of land are not large enough to drill their own well. Pooling creates a method whereby a tract of land can be combined with other tracts of land so that spacing regulations can be met. It is through the pooling regulations that the owners of these smaller tracts of land can, in an equitable way, share in the proceeds from the reservoir. Today, because of the smaller size of most tracts of land, they become a part of a pool of leases and are pooled together for the development of a common source of supply.

Pooling, of this nature, will accomplish the following:

1. Pooling will prevent the loss of pressure in the reservoir
2. Pooling will prevent waist and loss by capturing more of the product
3. Pooling will distribute production to all mineral owners in the pooled area

The Need for Regulations

As a result of the problems that occurred with drilling multiple wells in close proximity to one another, it became clear that the industry needed regulations in place to protect both the geologic structures and mineral owners. Consequently, states began implementing statues and creating regulatory agencies that would oversee the exploration and development of oil and gas.

Today, state regulatory commissions are in place to oversee the drilling activities of oil companies. In many states, stringent rules must be followed and mandate:

1. That one well can drain only a certain amount of acres
2. That each well must be a certain distance from another well
3. That each well must be a certain distance from a lease line
4. That each well must be a certain distance from section lines or survey lines
5. That wells will often be limited in the amount of product they can produce each day

State Regulatory Commission Websites

Alabama State Oil and Gas Board - www.gsa.state.al.us/ogb/db_main.html
Arkansas Oil and Gas Commission - www.aogc.state.ar.us/
Dept of Conservation for State of California - owr.conservation.ca.gov/WellSearch/WellSearch.aspx
Kansas Corporation Commission - www.kcc.state.ks.us/
Colorado Oil & Gas Commission - cogcc.state.co.us/
Louisiana Dept of Natural Resources - dnr.state.la.us/www_root/sonris_portal_1.htm
Mississippi State Oil and Gas Board - www.ogb.state.ms.us/welldatamenu.php
Michigan Dept of Environmental Quality - www.deq.state.mi.us/mir/
New Mexico Oil Conservation Division - www.emnrd.state.nm.us/OCD/OCDPermitting/Data/Wells.aspx
Ohio Oil and Gas Commission - www.dnr.state.oh.us/mineral/database/tabid/17730/Default.aspx
North Dakota Oklahoma Corporation Commission - www.occ.state.ok.us/
Pennsylvania Bureau of Oil and Gas Management - www.dep.state.pa.us/dep/deputate/minres/oilgas/onlineservices.htm
Texas Railroad Commission - www.rrc.state.tx.us/
West Virginia Oil and Gas Conservation Commission - www.wvgs.wvnet.edu/pipe2/OGWISHelp.aspx

Rules for establishing a Pooling area

Before the pooling of more than one lease or tract of land can take place, several dynamics must be in place.

1. The purpose of the drilling must be to reach a common source of supply.
2. The tract of land where the drilling is to take place must be held by an oil and gas lease. Plus, most of the other lands in the pooled area must be held by oil and gas leases.
3. The oil and gas leases must contain pooling language provisions.
4. A drilling bond must be approved and given to the regulatory agency.
5. A drilling permit must be approved and given to the regulatory agency.

Spacing and Units

The establishment of many of these regulations revolve around the words *"spacing and units".*

Spacing: Spacing refers to distances. One well can drain only a certain amount of acres within a certain distance from another well. The well must be a certain distance from a lease line and a certain distance from section lines or survey lines.

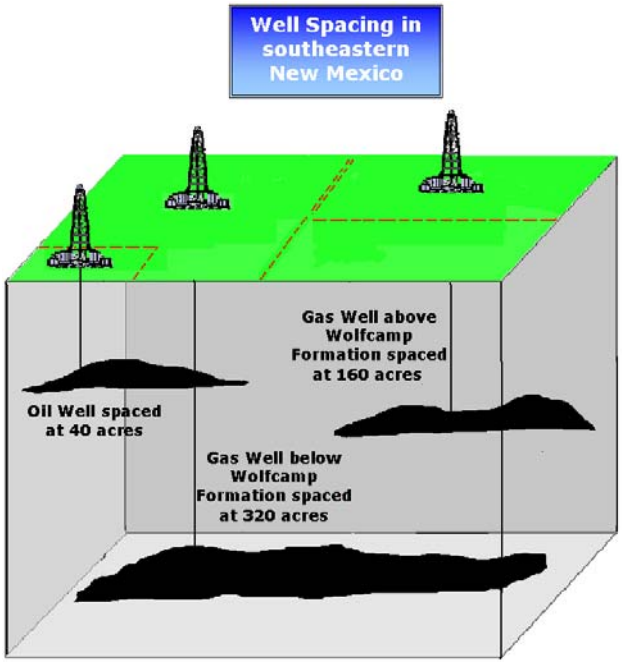
Units: Creating *units* was another method used by governmental agencies to distribute production in an equitable manner. A unit can be defined as a distinct area of surface and subsurface which is established for the purpose of drilling and producing oil and gas. Often a unit size (number of acres) is already established by the applicable state governmental agency. The size and shape of a unit can be dependent upon the type of production (either oil or gas), the distance from existing production (whether drilling is considered wildcat or developmental drilling), the geographical location of drilling, and the geological formation or horizon being developed. Generally, units are rectangular or square in shape.

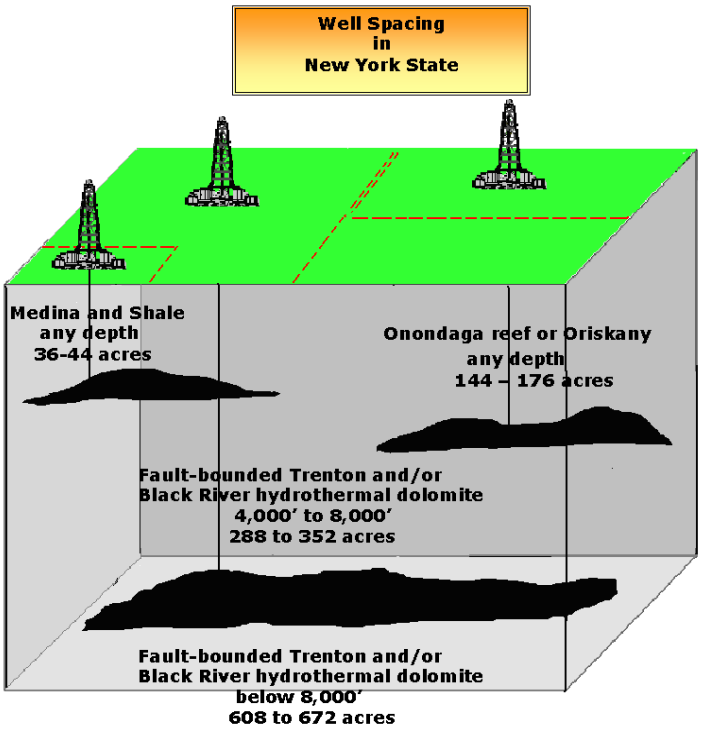
For instance, in southeastern New Mexico the applicable spacing would be as follows:

Wildcat gas wells drilled in southeast New Mexico above the Wolfcamp formation are spaced at 160 acres.

Wildcat gas wells drilled in Southeast New Mexico below the Wolfcamp formation are spaced at 320 acres.

Wildcat oil wells drilled in Southeast New Mexico drilled at any depth are spaced at 40 acres.



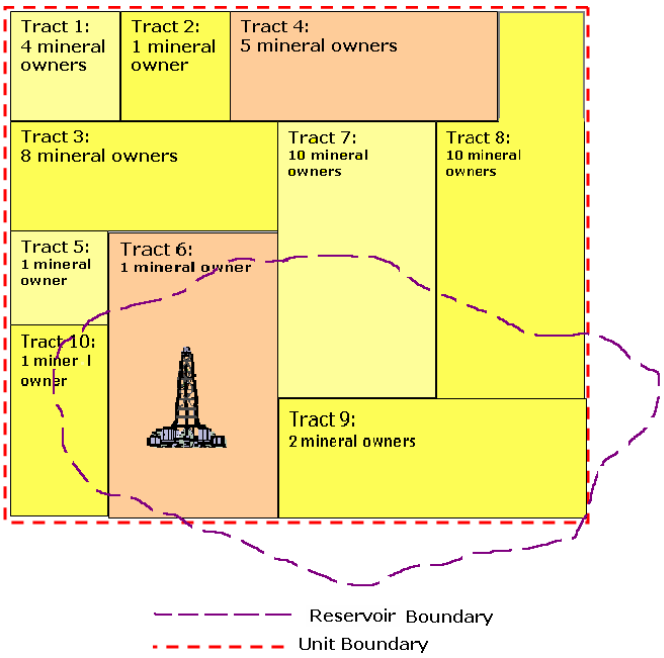


In New York the statewide unit spacing sizes are as shown.

All other Pools

above 4,000'	= 72 to 88 acres
4,000 – 6,000'	= 144 to 176 acres
6,000 – 8,000'	= 288 to 352 acres
Below 8,000'	= 608 to 672 acres

Because of the size of many units, a unit will involve many owners. As illustrated, this unit contains 10 separate tracts of land. Many of the tracts contain several undivided mineral owners.



A unit such as this will necessitate multiple oil and gas leases involving several mineral owners. In most cases, more than one oil and gas company would have been involved in the leasing process.

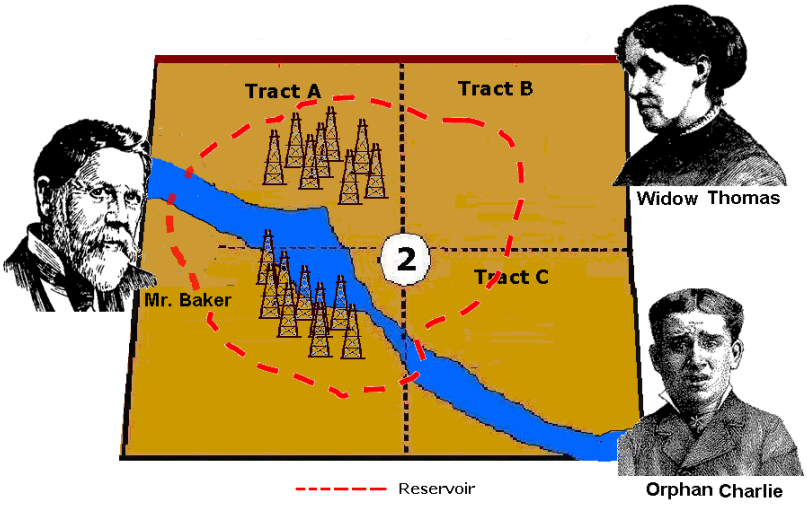
Notice: The reservoir boundary does not exist under tracts 1, 2, 3, or 4; yet, once a unit is established, everyone who owns a mineral or royalty interest inside the unit boundary will share in the production of the well. This would include royalty owners, working interest owners and any other burden type.

Once the boundary is established, whatever is done on one tract of land is as if it were done on every tract of land. Although the well was drilled on tract 6, it was as if it were drilled on every tract of land.

Pooling Vs. Unitization

The meaning of these two terms, as used by many, becomes identical; however, pooling usually denotes the combining of leases together in order to drill one well. Unitization usually denotes the pooling of leases into one unit area whereby several wells can be drilled.

The Rule of Capture



The rule of capture can also be described as the *law of capture* and came to the United States from English common law.

In the illustration, assume that Sunrise Oil and Gas leased Mr. Baker under Tract A and drilled several wells draining the oil from beneath the Widow Thomas' land and the Orphan Charlie's land. Under the rule of capture, Sunrise Oil & Gas could not be prosecuted. They did nothing wrong. The general rule is that the first person to "capture" a resource such as water, oil, gas or game animals owns that resource.

Since Sunrise Oil and Gas was the first to extract or "capture" the oil from a well that bottomed within the subsurface of Tract A, they would acquire absolute ownership of the substance, even though it drained oil from the widow and orphan's tracts of land.

That was true in the late 1880's and is still true in the United States today. The Hollywood Movie, **There Will Be Blood** makes a point for establishing this fact. Daniel Plainview, an oil and gas tycoon is asked to acquire an oil and gas lease on the neighboring tract of land from a church going man.

Plainview's response is:

"If you have a milkshake, and I have a milkshake, and I have a straw... and my straw reaches across the room and starts to drink your milkshake, I drink your milkshake! I drink it up!"

EXERCISE 13:

Assume that you work for Sunrise Oil and Gas. You have drilled one well on the Baker tract of land (Tract A) but no one has leased or drilled on the Widow Thomas or Orphan Charlie lands (Tract B & C).

1. The Widow Thomas sent you the following letter.
2. Your Land Manger responded by writing the following memo.

In light of the circumstances, the Thomas letter and your Land Manager's memo discuss the following questions:

1. What obligations do you have to lease the Thomas land?
2. Should you drill a well on the Thomas Lands?
3. Can you drill a second well on the Baker lands?
4. What options are in your best interest?

Dear Sirs,

I am the owner of the E/2 lands that sit contiguous to the well you have located on Bart Baker's property. It has come to my attention that the well located on his property (the W/2 of the section) has been draining oil from underneath my lands for the last three years. I do not think that is fair and would be willing to lease my lands to you so that you could drill a second well on the E/2 of the section.

I understand that when Mr. Baker leased to you he negotiated a lease royalty of 1/8th. However; since that time the horizon has been proven and in order to make up for lost revenue, I would be willing to lease for a 1/4th royalty.

Sincerely,

Mrs. Thomas

Memorandum:

RE: E/2 lands (320)

I have reviewed the Thomas letter forwarded by you last week. Our geologists and engineers believe that the reservoir probably does extend into the E/2 lands; however, if we lease this tract of land we may be obligated, through implied covenant, to drill a second well at an estimated cost of $10,000,000 plus the royalty Thomas is asking for would significantly impact our revenue stream. We are currently receiving 87.5 cents on the dollar from the Baker well. If we give Thomas a 25% royalty and drill a successful well, we will only receive 75 cents on the dollar.

Plus, I recently learned that Horizon Oil and Gas was able to get an increased density order from the commission on their well located 2 miles north of our well.

Land Manager

If you were Sunrise Oil and Gas…

1. What obligations do you have to lease the Thomas lands?

_____
_____

2. Should you drill a well on the Thomas Lands?

_____
_____

3. Can you drill a second well on the Baker lands?

_____
_____

4. What options are in your best interest?

_____
_____
_____
_____

Exceptions to the Rule

1. Negligently drained oil or gas
2. Illegally drained oil or gas
3. Stored gas

Correlative Rights Doctrine

The Correlative Rights Doctrine helps to keep the rule of capture in check. Correlative rights limits the rights of landowners to a common source of groundwater (such as an aquifer) to a reasonable share, typically based on the amount of land owned by each on the surface above.

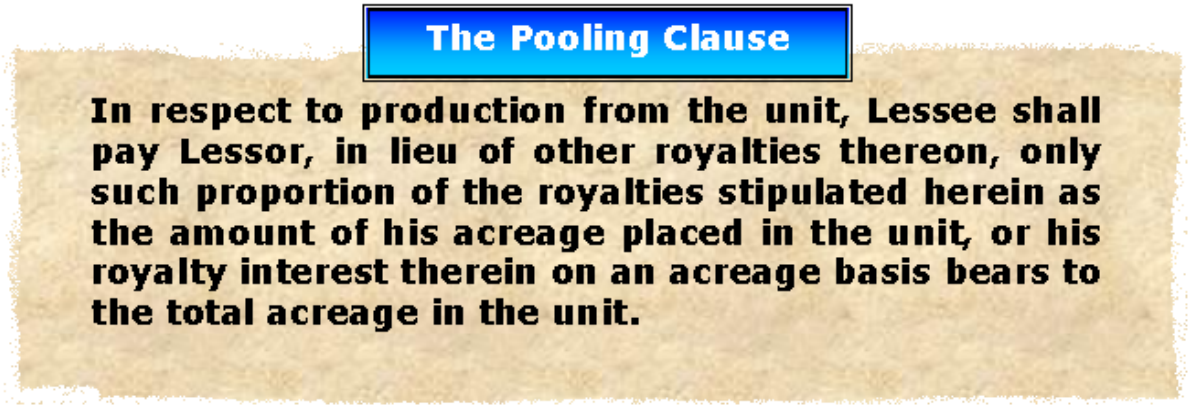
In many states, this doctrine is also applied to oil and gas and establishes that one well can drain only a certain amount of acres. In many instances, wells are limited in the amount of oil or gas they can produce in a day. The correlative rights doctrine is the legal basis for pooling.

With this doctrine, an oil company has certain duties that come with the exploration of oil and gas:

1. To Prevent Waste
2. To Prevent Spoilage
3. To Observe Conservation Laws

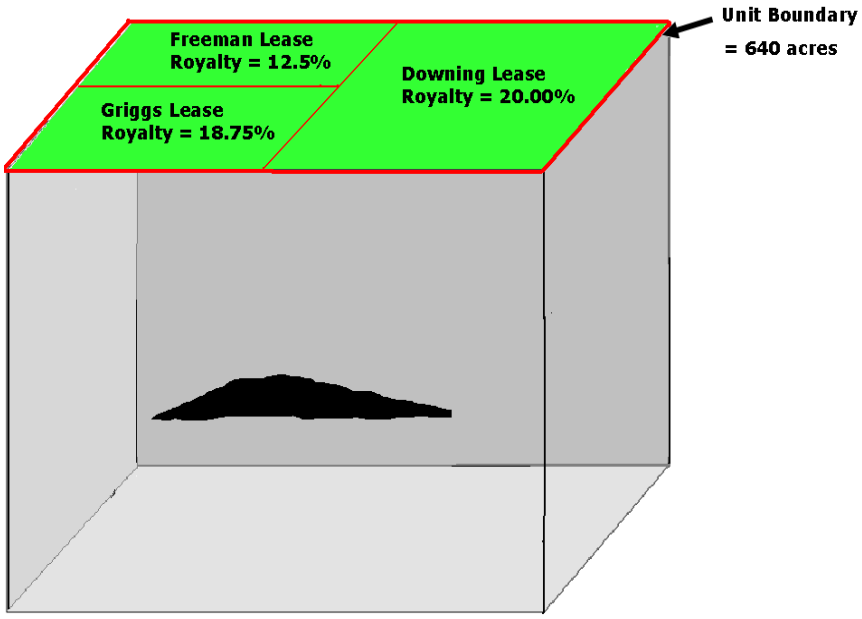
The Pooling Clause in the Lease

As stated, a single tract of land is generally smaller than a drilling unit. When this happens, all leases inside the boundary of the unit are said to be pooled together. They become a part of “the pool” of leases. All leases inside the unit boundary then share in the production from the unit well. The pooling clause allows the oil company to calculate the lessor’s royalty based on his or her acreage contribution as it relates to the entire unit size (see pooling language).



This language simply means that every royalty owner will be paid his or her royalty interest based on the number of acres they are contributing to the total number of acres in the unit.

Example:



As seen in the illustration, the Downing lease covers the E/2 of the section. The Griggs lease covers the SW/4 and the Freeman lease covers the NW/4 of the section. Your company has formed a 640-acre unit, pooling all three leases into the unit. Each of the mineral owners negotiated the royalty percentage as set out on the illustration. Based on the mineral acreage owned by these three parties and the royalty amount found in their leases, how would you calculate their royalty?

Downing Lease - 320/640 X 20% = 10%
Freeman Lease - 160/640 X 12.5% = 3.125%
Griggs Lease - 160/640 X 18.75% = 4.687%

The Proportionate Reduction Clause

Generally, if the person signing the lease owns less than a full 100% of the described tract of land or an undivided interest in the tract of land, this lesser interest is ***not*** set out in the body of the lease as you can see in the following example:

WITNESSETH, That the said lessor,...leases...unto said lessee...all that certain tract of land... situated in the County of Dewey, State of Montana, described as follows, to-wit:

Township 16 South, Range 16 West
Section 14: SW/4NW/4, W2SW/4

of Section 14, Township 16 South, Range 16 West, and containing 120.00 acres, more or less.

From a glance at the lease, one could not tell if the lessor owns less than 100% of the tract of land being described. The legal description describes the total acreage of the tract of land being leased (120 acres) and does not give any hint as to how much of the tract of land the lessor actually owns. From the face of the lease, one can only assume that the lessor owns all 120 gross acres. However, the lessor may only own a fractional part (an undivided interest) of the tract of land.

Assume you and four other friends invested in a speed boat. Together you pooled all of your money and were able to buy the boat in equal shares. As a matter of fact, it sits in your backyard. When somebody sees the boat, they don't see 25% of the boat. They see the whole boat. That is similar to the oil and gas lease. The description is a picture of the entire tract of land.

Assume 10 siblings inherited the 120-acre tract of land shown on the lease. They each own an undivided 1/10 interest in the tract or 12 net acres each (120 X 1/10th = 12 net acres).

The body of the lease would show the entire 120-acre tract of land—not the 1/10 owned by each of the lessors.

If one of the siblings signed a lease and negotiated a

1/8th royalty from production, should the lessor be entitled to receive a *full 1/8 royalty* based on 120 acres? _____

Calculating the lessor's royalty when he or she owns less than 100% of the interest under the leased tract of land is addressed in the *Proportionate Reduction Clause*. The clause states,

> "If said lessor owns a less interest in the above described land than the entire and undivided fee simple estate therein, then the royalties and rentals herein provided shall be paid the lessor only in the proportion which his interest bears to the whole and undivided fee."

In this case, the lessor would receive his or her full 1/8th royalty but only based on his or her 1/10th ownership in the tract of land (120 gross acres X 1/10th X 1/8th royalty).

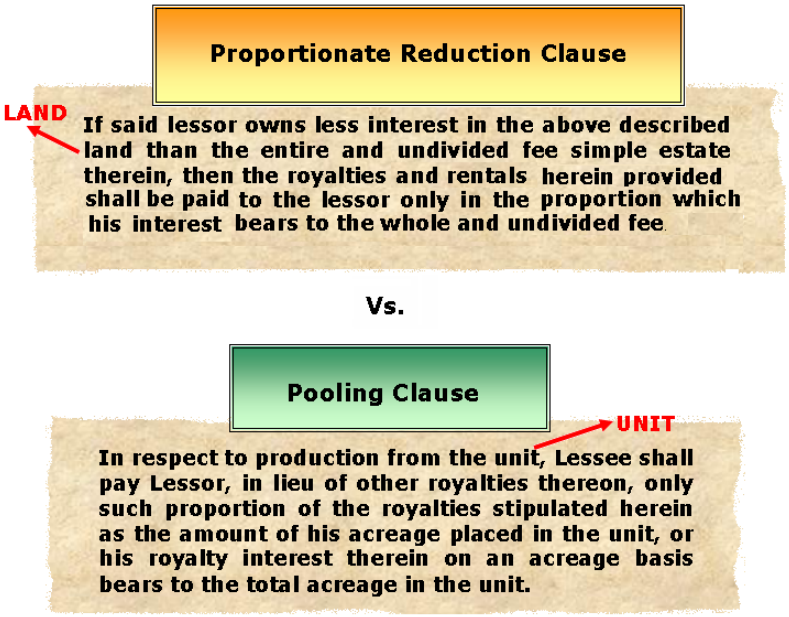
Without the proportionate reduction clause in the lease, the oil and gas company would be obligated to pay the lessor a full 1/8th royalty on the entire tract of land.

If the oil company had leased all 10 siblings, each with a 1/8th royalty and the proportionate clause was missing—what would be the effect?

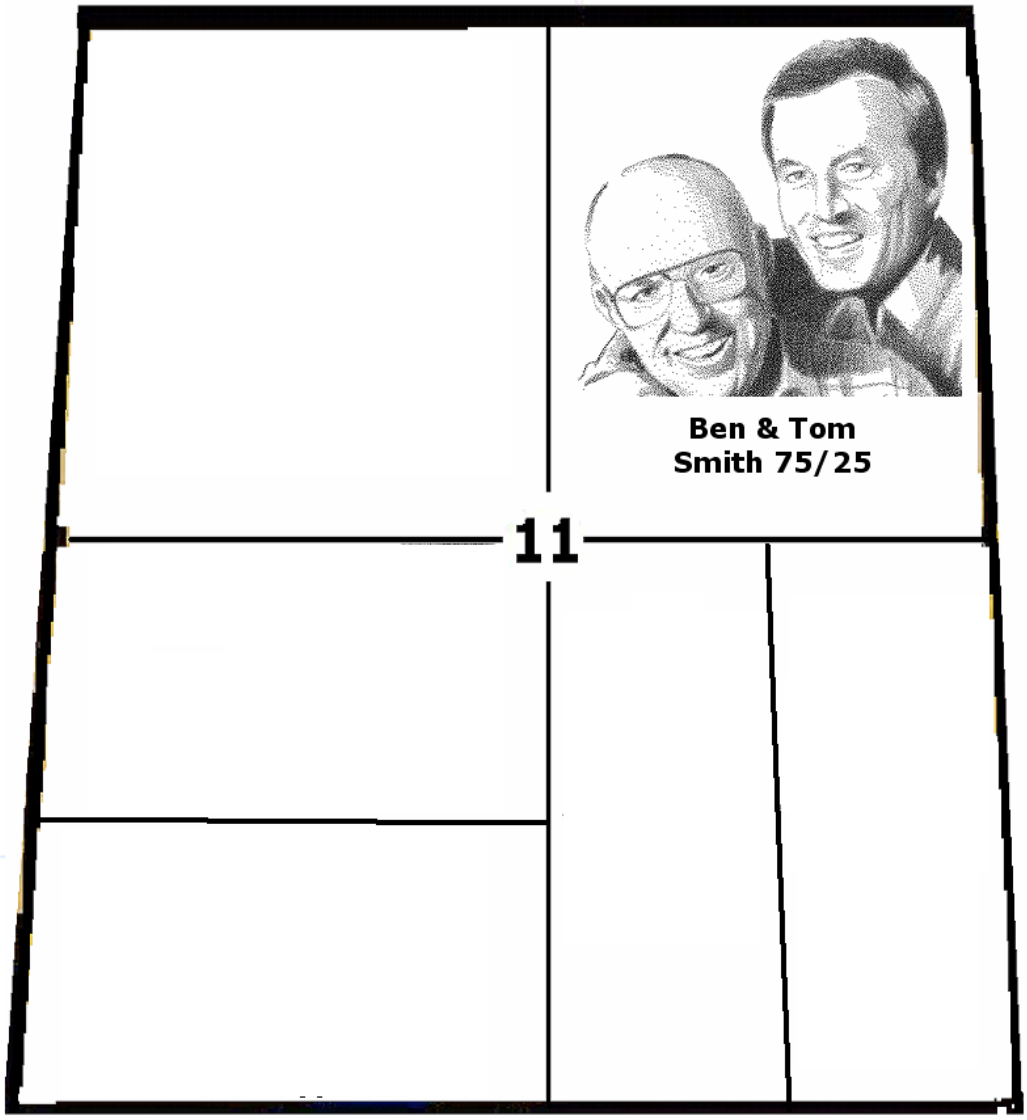
This could be devastating to the oil company because they would be obligated to pay a total of 10/8th in royalty payments. This would be more than the company would make from production.

Putting the Pooling Clause and Proportionate Clause together

When calculating an undivided interest that has been pooled within a drilling unit, the land professional must refer to both the pooling clause and the proportionate reduction clause.



Example 1:



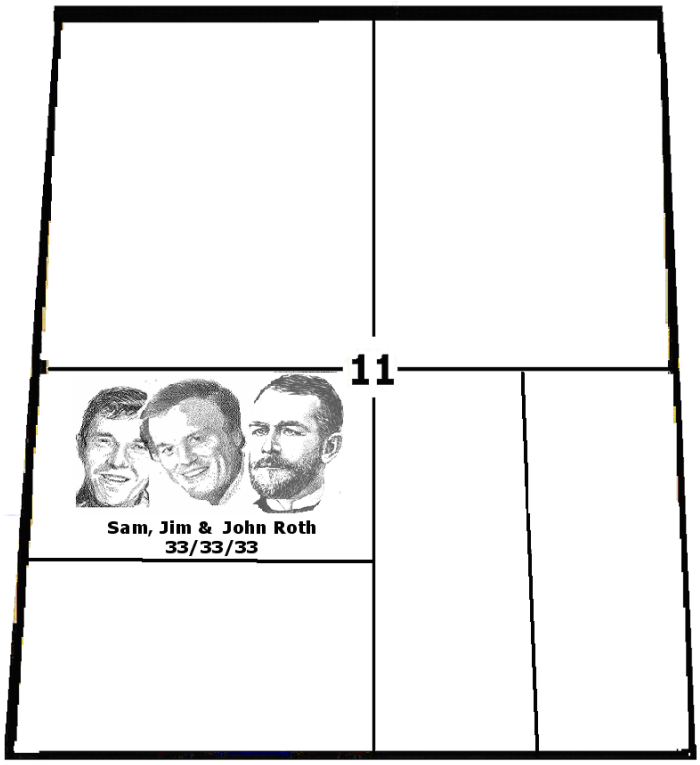
	Tract Acres / Unit Acres	X % of Tract Owned	X Leased Royalty	= Unit Interest
Ben Smith				
Tom Smith				
Total				

Ben & Tom Smith each own an undivided interest in the NE/4 of Section 11. Ben owns 75% and Tom owns 25%. Assume each leased to Sunrise Oil & Gas for an 18.75% royalty.

Using the chart, calculate each of their royalty interests.

Example 2:

A father divided his 80-acre farm into three equal tracts of land when he deeded them to his three sons, Sam, Jim and John Roth. At the same time, the father deeded each of the sons an undivided 1/3rd interest in and to all of the oil and gas minerals under the entire tract of land.



Each of the brothers owns an undivided 33.33333% interest in and to the minerals under the entire tract of land.

Horizon Oil & Gas leased each of the brothers. Assume Sam leased for a 1/8th royalty. Jim leased for a 3/16th royalty and John leased for a 1/6th royalty.

This tract of land was included inside the boundary of a 320-acre drilling unit; therefore, when calculating each of the brother's interests, the pooling clause must come into play.

Sam's calculation = _____
Jim's calculation = _____
John's calculation = _____

Example 3:

Your Company owns a lease covering 160 acres in a 320-acre unit. The royalty negotiated by the lessor is for 1/8th of production; however, your lessor owns an undivided 7% interest in the tract of land. How would your lessor's royalty be calculated?

- ☐ 160/640 X 1/8 = 3.125%
- ☐ 160/320 X 1/8 = 6.25%
- ☐ 160/320 X 12.5% X 7% = .4375%

Example 4:

Amy Robbins leased a 160-acre tract of land to your company with a 3/16th royalty. This tract of land was pooled into a 640-acre unit. She owns the tract of land equally with four other siblings. If production occurs, what royalty interest would Amy receive?

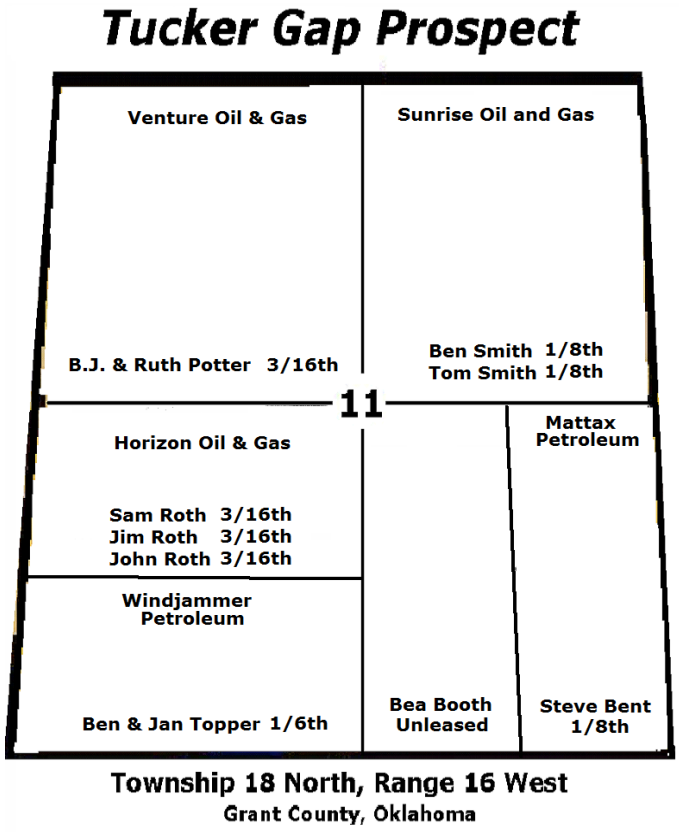
- ☐ 160/640 X 18.75% = 4.6875%
- ☐ 160/640 X 25% X 18.75% = .9375%

Paying the expenses of drilling operations

Oil and gas exploration can cost millions of dollars for each well drilled. Those costs are borne by the oil and gas companies that own leases within the drilling unit. Each company will pay their share of costs based on their *proportionate part* of the unit owned. This interest is called the company's Gross Working Interest or "GWI". GWI is a simple calculation and is based on the number of acres the company is contributing to the unit divided by the total number of acres within the unit boundary.

Based on the plat, calculate each of the companies GWI in the Tucker Gap Prospect Unit.

Venture Oil & Gas	_____
Sunrise Oil & Gas	_____
Horizon Oil & Gas	_____
Windjammer Petro	_____
Mattax Petroleum	_____
*Bea Booth	_____
Total	***100%***



*Note: Bea Booth is an unleased mineral owner and at this point, her interest accounts for 12.5% of the unit. Unless Bea Booth signs a lease or the Oklahoma Corporation Commission (state regulatory agency) does something else with her interest, we must view her interest as if she will be paying her proportionate part of the drilling costs.

Paying the Royalty Owners out of Production

EXERCISE 14:

Assume that an initial test well was going to be drilled in the Tucker Gap Prospect. Section 11 has been designated as the unit boundary for the well. Each of the tracts of land were leased as shown on the chart and each of the mineral owners own an interest in their designated tract as based on the information in Exercise 12.

Determine the unit royalty that should be paid to each of the mineral owners.

Legal Description	Lessor	Lessee	Roaylty
T18N, R16W, Sec. 11: NE/4	Ben Smith	Sunrise Oil and Gas	1/8th
T18N, R16W, Sec. 11: NE/4	Tom Smith	Sunrise Oil and Gas	1/8th
T18N, R16W, Sec. 11: NW/4	B.J. & Ruth Potter	Venture Oil & Gas	3/16th
T18N, R16W, Sec. 11: N/2SW/4	Sam Roth	Horizon Oil & Gas	3/16th
T18N, R16W, Sec. 11: N/2SW/4	Jim Roth	Horizon Oil & Gas	3/16th
T18N, R16W, Sec. 11: N/2SW/4	John Roth	Horizon Oil & Gas	3/16th
T18N, R16W, Sec. 11: S/2SW/4	Ben & Jan Topper	Windjammer Petroleum	1/6th
T18N, R16W, Sec. 11: E/2SE/4	Steve Bent	Mattax Petroleum	1/8th
T18N, R16W, Sec. 11: W/2SE/4	Bea Booth	Unleased	

Unit Royalty Calculation

Ben Smith	
Tom Smith	
B.J. & Ruth Potter	
Sam Roth	
Jim Roth	
John Roth	
Ben & Jan Topper	
Steve Bent	
Bea Booth	

Paying all Owners out of Production

GWI stands for the gross working interest the oil company must pay out in expenses. However, there is another type of interest called *Net Revenue Interest* (NRI). This interest represents the amount of production they will be able to keep from a producing well.

In order to calculate a company's NRI, one must first calculate the company's GWI and any burdens that are attached to their interest. Royalty interests are burdens. These were created at the point in time the lessor signed the oil and gas lease with the company. They must be paid and are similar to those burdens attached to one's paycheck. A person has a gross number on the paycheck and a net number on the paycheck. The difference between the gross and net are the person's burdens that must be paid.

NRI is calculated by simply subtracting the burdens from the GWI. The oil company keeps what is left over or their NRI.

EXERCISE 15:

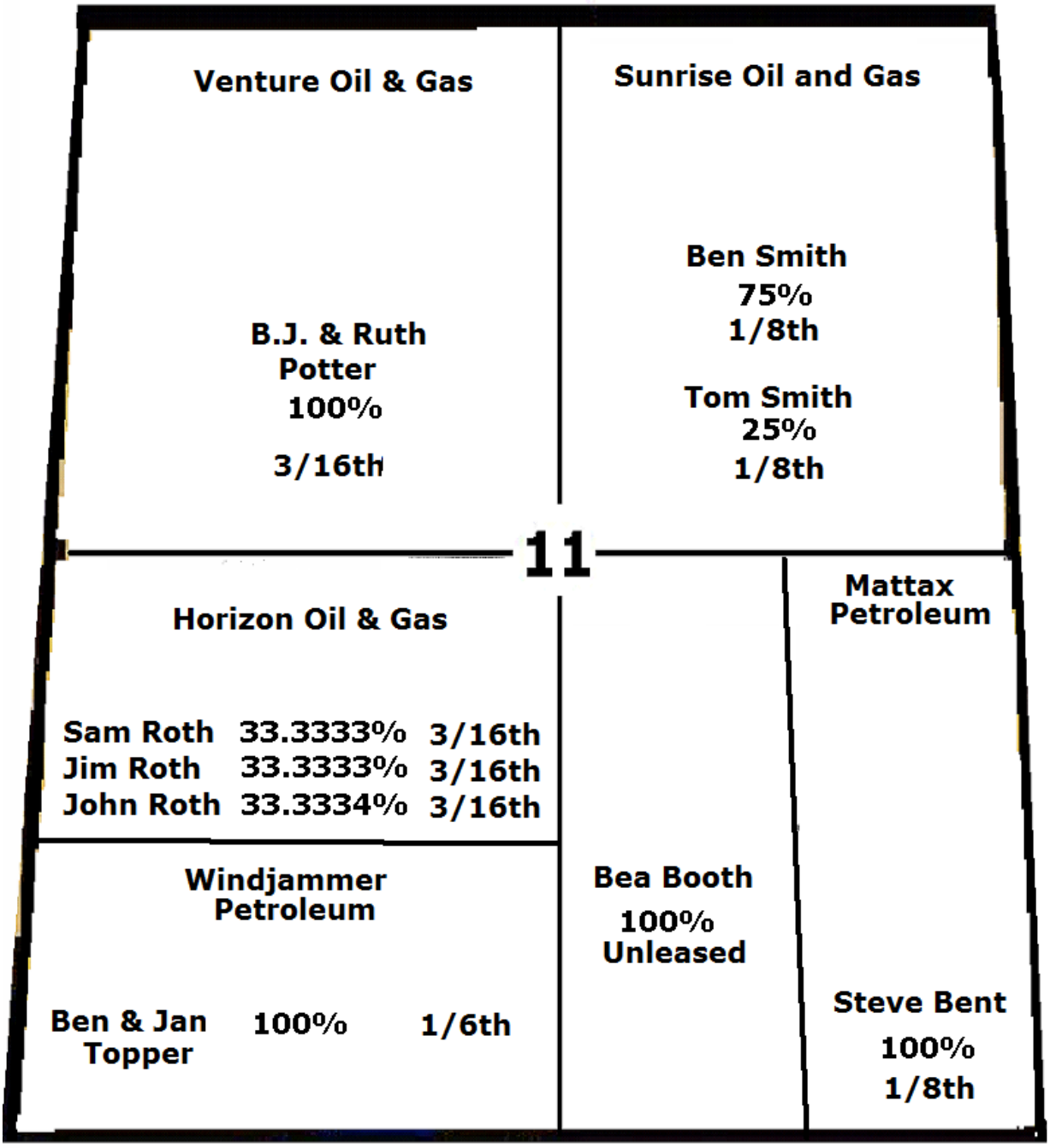
Using the following plat map as a guide and the following spread sheet, calculate each owner's interest in the well.

First, calculate the company's GWI (the number of acres they are contributing to the unit divided by the total pooled acres in the unit).

Next, calculate each of the royalty owner's interest and place this number in the corresponding row for the royalty owner and the corresponding column that represents the oil company who is burdened by this interest

Finally, calculate the oil company's NRI by subtracting the burdens attached to their interest from the GWI associated with the company.

Tucker Gap Prospect



Township 18 North, Range 16 West

Grant County, Oklahoma

	Sunrise	Venture	Horizon	Windjammer	Mattax	Bea Booth	Total
Acres							
GWI							
NRI							

Royalty Burdens

Ben Smith							
Tom Smith							
B.J. & Ruth Potter							
Sam Roth							
Jim Roth							
John Roth							
Ben & Jan Topper							
Steve Bent