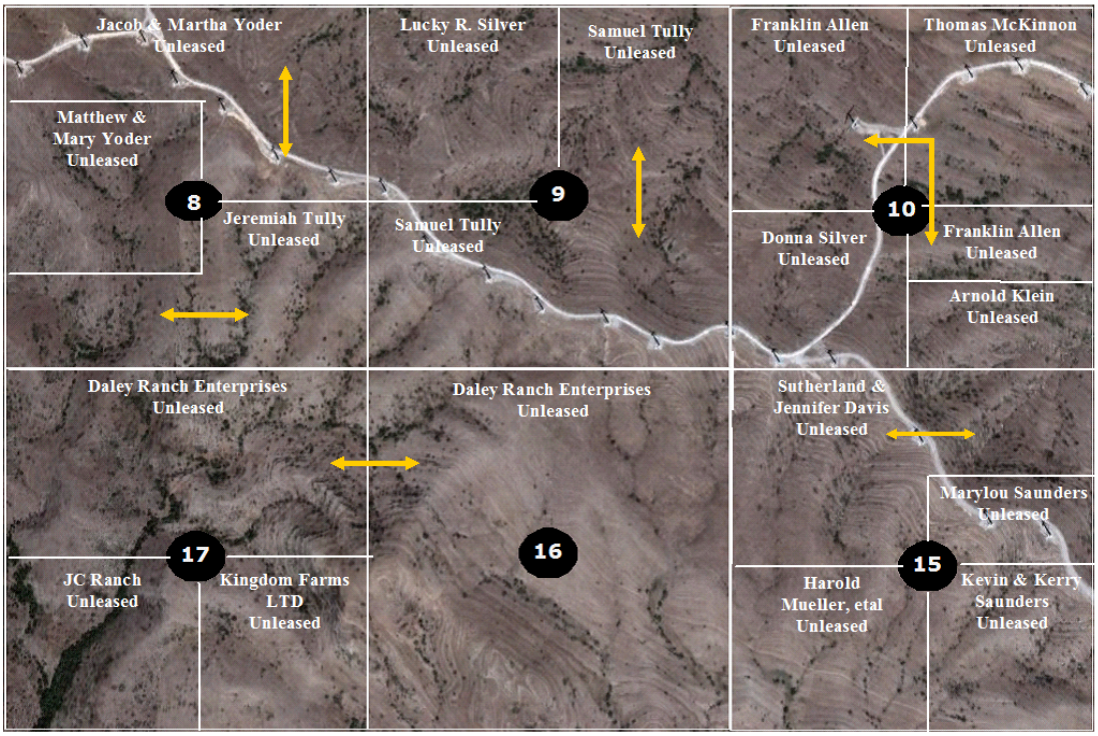
The Seismic Phase

"Madison Prospect" Scenario

Assume that both Sunrise Oil & Gas and Venture Oil & Gas are rival oil and gas companies. Over the years, they have developed oil fields in the same area but there seems to be a high degree of competition between the two companies. Unknowingly, both have an interest in the *"Madison Prospect"* – a six section "wildcat" area (as shown in the following plat). Drilling between 11,000' and 12,000' has been successful a few miles to the north and south of the Madison Prospect but no wells have ever been drilled in this area. After a cursory check of the ownership records, both companies, independently from one another, determined that every tract of land is currently unleased.



Neither company has any geologic data in the six section area; therefore, to proceed in a wide scale leasing program could be very expensive and, in the end, might be a complete waist of the company's money. Geophysical data might condemn the entire area!

Several types of studies might be done including seismic, magnetic, gravity, electrical, electrical magnetic and radioactive. Even though these studies could cost hundreds of thousands of dollars, it would be impossible to locate any potential drilling locations without this valuable information.

Seismic Research

Although seismic research has been around for decades, over the last few years, 3-D studies have proliferated in the Petroleum Industry. This type of geophysical study has become the "poster child" particularly in an exploratory or "wildcat area" and both Sunrise and Venture have chosen to use seismic to evaluate the area.

Completing a seismic study will take several steps.

1. First, the type of seismic study must be determined. Will the companies choose a 2-D or 3-D seismic shoot?
2. Next, each exploration company must enter into a contract with a reputable seismic research company.
3. In a number of states, seismic permits must be obtained and approved from the appropriate governmental agency.
4. Surface and mineral ownership for each tract of land must be determined and then rights of access must be acquired.
5. Additional surveys must then be done in order to properly position all equipment.
6. Ingress and egress routs must be determined.
7. If 2-D seismic is to be shot, multiple listening devises called geophones are placed along several straight lines.
8. If 3-D imaging is to be used many more lines of geophones will be placed throughout an entire section of land. A 3-D shoot will often cover ten to hundreds of square miles.
9. Small explosions or vibrations will create shock waves that travel through the subsurface strata and are then reflected back to the surface where they are captured by the surface geophones.
10. The retrieved data is then processed and evaluated for further exploration purposes.

THE GEOPHYSICAL EXPLORATION AGREEMENT

The entire seismic survey process can take from 12 to 18 months with a price tag for 3-D imaging, depending on surface terrain and landowner issues, from $25,000 to $150,000 per square mile.

Three types of Seismic Programs

Once the type of study is determined, one of three types of programs can be purchased:

A Proprietary Shoot – The benefit of this choice is that only Sunrise or Venture would pay for and receive the "keys" to the seismic data. The downside is that 100% of the costs and risks will be borne by that company. An additional downside is that knowledge of their activity could leak to the competitor company before the lease acquisition was complete. This company, with a suspicion that seismic had turned up something of value, might begin to buy leases in the area. Any of the competitor's leased tracts of land found within a drilling location would be able to share in production benefits.

A Joint Shoot – Because of the high costs from conducting seismic studies, companies will often enter into a joint shoot with other companies. If Sunrise and Venture joined together to develop the Madison Prospect, the seismic costs would be split in a pre-determined fashion. The benefit of this choice is that both companies would share in the seismic data as well as the costs and risks of the venture. The downside is that if the shoot were to turn up potential drilling locations (all worth multiple millions of dollars) the benefits must be shared between the two parties.

A Seismic Spec Shoot – When hundreds of square miles are to be shot, the costs will enter the tens of millions of dollars; therefore, seismic companies have been known to contract with investor companies in order to fund the study. In a case like this, the data would be owned by the seismic company who would then, in turn, sell licenses to many individual companies for small pieces of the study. This data can be sold several times to different companies.

If a seismic company had already completed a large shoot that included the Madison Prospect area, it would make sense that Sunrise Oil & Gas and Venture Oil & Gas would buy a license and receive the data already processed.

The benefit of this choice is that the seismic has already been shot. Permitting and/or options have already been done. The downside is that more than one company would have their hands on the same data. This would definitely impact the acquisition costs of leases and would affect any leasing strategy.

If either Sunrise or Venture enters into either a *proprietary* or *joint shoot* they would enter into a Geophysical Exploration Agreement that might contain the outline of topics covered on the following page. A complete agreement is located in the Addendum Section of the book.

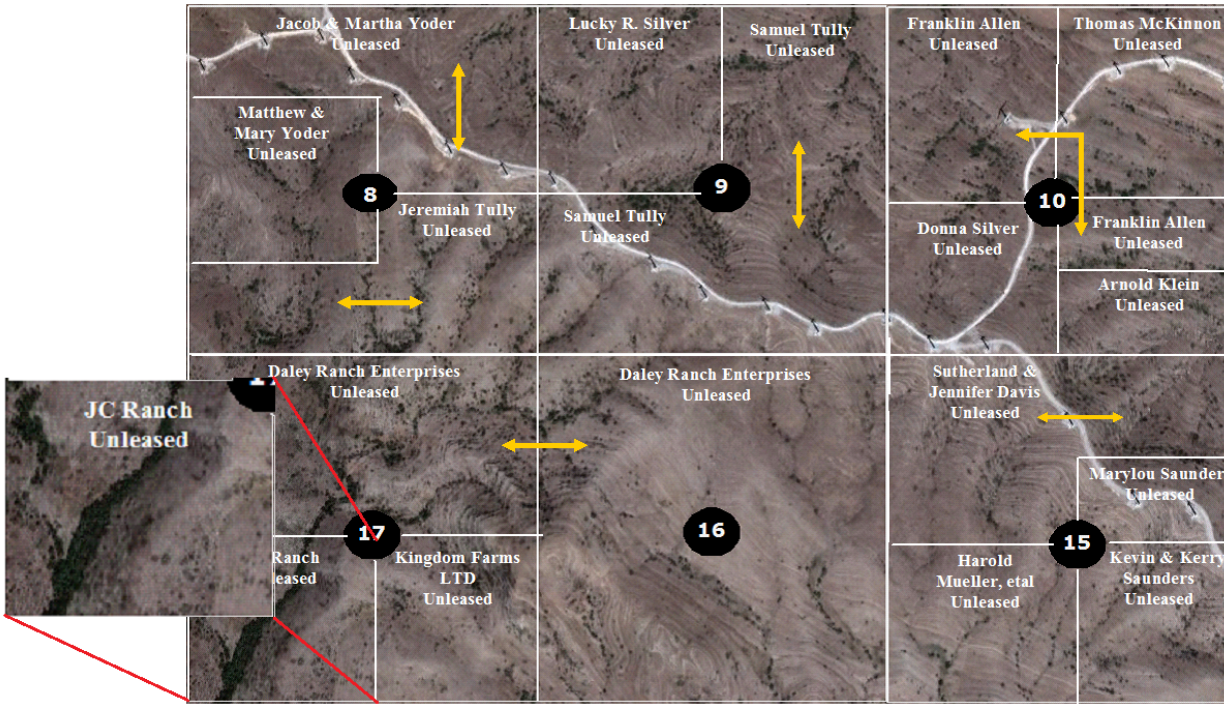
THE SEISMIC OPTION AGREEMENT

Receiving consent from the appropriate owners

Once the geophysical agreement is signed, land and mineral owners must be contacted to give access consent for the project. Over the years, there has been confusion regarding which owners have the right to grant a seismic company permission to do geophysical operations on the tract of land. Before any permitting can be done, the necessary legal rights must be secured from the appropriate parties; however, as with any area of law, state statutes can vary and legal advice should be sought prior to conducting activities in any given area.

Fee Simple Absolute Ownership

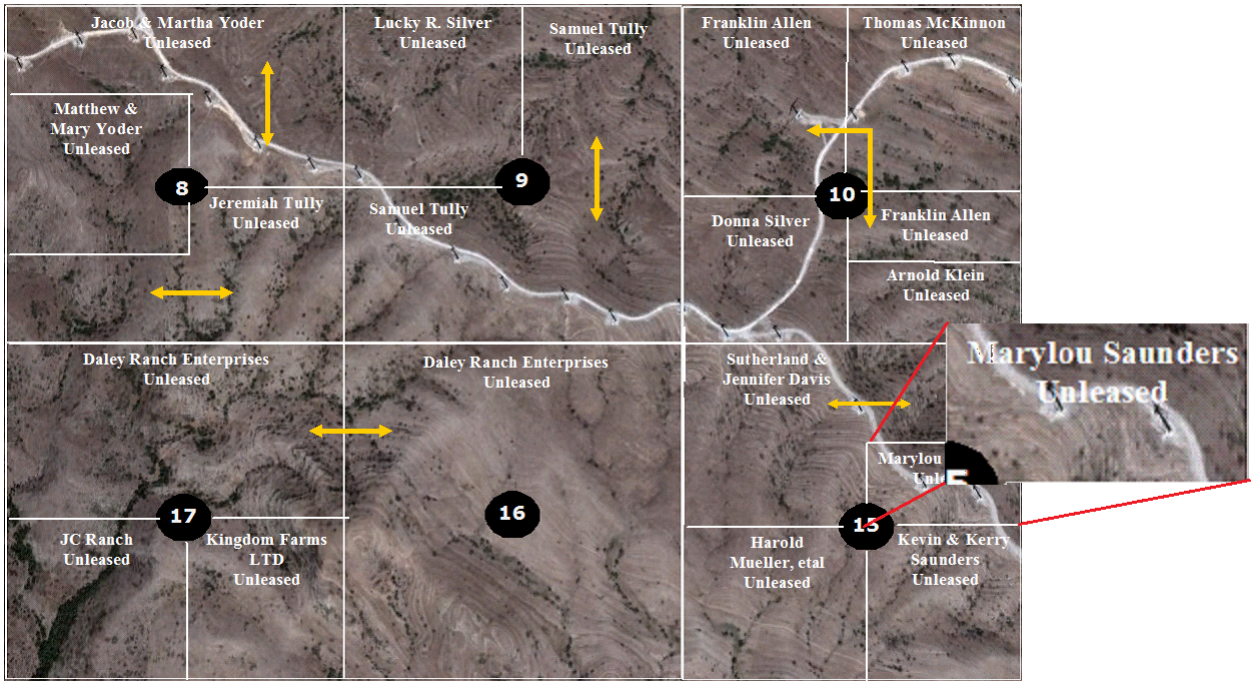
Assume that the highlighted tract of land (owned by JC Ranch) is a *fee simple absolute* tract of land. In this case, JC Ranch owns both the surface and subsurface lands. To enter this tract of land for geologic activities without the consent of the owner would be a clear act of trespass. Consent must be received from the owners of JC Ranch.



Split Estate Lands

Many tracts of land in the United States are known as *split estate lands*. This simply means that the owner of the subsurface mineral estate is different than the owner of the surface estate.

Assume that the highlighted tract of land is a split estate tract of land. Marylou Saunders owns all of the subsurface minerals but none of the surface. To enter the land, in an attempt to conduct seismic activities, without her consent would be considered trespass.



Since geophysical activities are done on the surface of the land, it would appear that the surface owner would be the party granting these rights. However, when there has been a severing of mineral ownership from the surface ownership, the severed mineral owner posses the dominate right of access to those minerals. Along with that right of access is the implied right to enter the surface to evaluate those minerals. Yates v. Gulf Oil Corp. 182 F.2d 286 (Tex C.A. 1950).

Another Texas court held that access consent acquired simply from the surface owner is not enough. Consent must be acquired from the severed mineral owner. Phillips Petroleum Company v. Cowden 241 F.2d 586 (1957).

Most mineral conveyances contain the following or similar words of grant to the recipient of the minerals: *"…together with the right of ingress and egress at all times…"* This simply means the mineral owner has been granted the

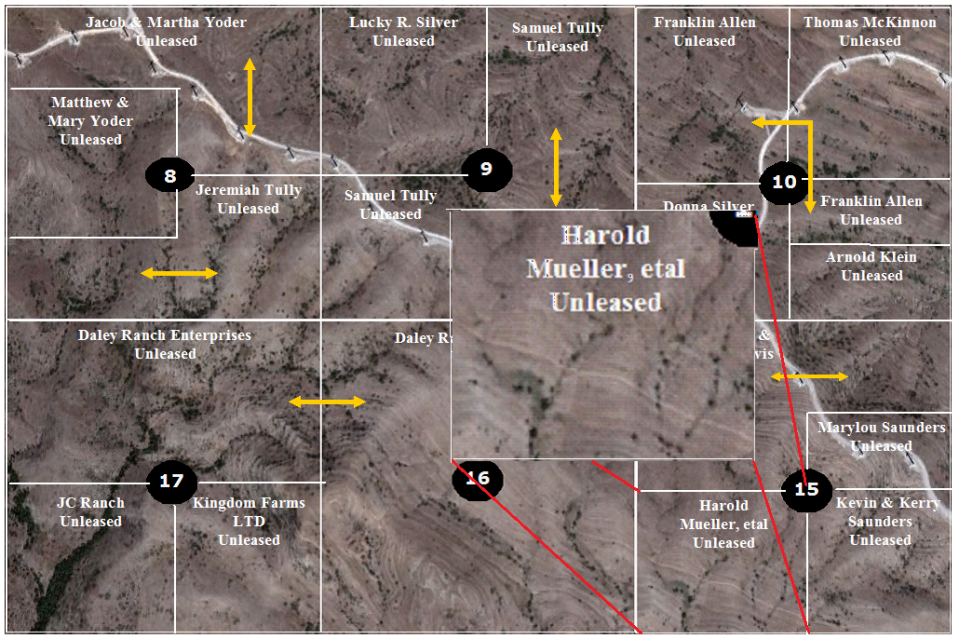
rights of access to the minerals along with the implied right to evaluate those minerals.

On the other hand, if the conveying deed to Marylou Saunders failed to contain the words *"together with the right of ingress and egress"* but instead contained words limiting the access rights or restrictions for such activates, the outcome would probably be different and Marylou Saunders would not be the party able to grant access right.

This doctrine of dominate mineral estate access is a clear principle of law; however, many companies will still approach both the surface and mineral owner for access consent. To do so can cause issues especially if the surface owner fails to grant access consent.

Multiple Mineral Owners of the same tract of land

Assume that the minerals in the highlighted tract of land are owned by several cotenant parties. Harold Mueller owns 55% of the minerals and the other 45% are owned by seven other cotenants. The question should be asked, "Must consent be acquired from all of the severed mineral owners or would Mr. Mueller's consent be sufficient?"



Sunrise understands that Mr. Mueller owns an undivided interest in the entire tract of land. In other words, Mr. Mueller owns 55% of every acre. Therefore, with his consent, Sunrise has obtained access rights to the entire tract of land and may be able to conduct seismic activity without the permission of the other mineral owners. Please note that states such as Louisiana vary on this issue.

However, keep in mind that each of the other mineral owners also has an undivided interest in the tract of land. They too can grant access rights to whomever they wish. Assume that Sunrise limited their acquisition to Harold Mueller's interest and the other mineral owners granted consent of access to Venture Oil and Gas. The result could be the inflation of future acquisition costs due to intense competition in the area.

Where mineral ownership varies by depths

Assume that Donna Silver (the mineral owner in the highlighted tract of land) only owns the mineral estate from the surface to 9,000'. Other individuals own the minerals below 9,000'. The question should be asked, "Since our drilling activity will be limited to 9,000' is Donna Silvers' consent enough?" Because the answer to this question is uncertain in many locations, consent should be acquired from all mineral owners at all depths.

When permission to conduct seismic activity cannot be obtained

There are cases when an owner will not grant the seismic company permission to survey a tract of land. When this occurs and in order to avoid trespass, the study must be modified. Seismic lines cannot cross the affected land. The result is that the data received for evaluation will be affected by the "No Shoot Area."

Types of Consents that can be Acquired

If Sunrise Oil & Gas chooses to purchase a *Proprietary Shoot* or if they partner with Venture Oil & Gas in a *Joint Shoot*, a decision must be made regarding how consent from the land and mineral owners will be obtained. The choices are threefold or a mixture of any or all.

1. ***Seismic Permits*** – Seismic permits can be taken on unleased tracts of land. These permits only entitle the oil company to the right for seismic activity.

   NOTE: Although *Permits* are frequently used, they have a downside. Assume that Sunrise Oil and Gas chose to acquire *Permits* rather than *Options* from the appropriate owners. These permits will only grant Sunrise the right for seismic testing. Once the testing is complete and analyzed, Sunrise must then acquire oil and gas leases from the same parties. By this time, Sunrise's presence could very well have been exposed in the area. Any competitors knowing that seismic data had been acquired and that a full-scale lease acquisition program was in progress would understand the seismic study had uncovered potential drilling locations that could be worth millions.

2. ***Seismic Options***

   - A Seismic Option is a combination of both the *permit* and the option to an *oil and gas lease*. The option grants the oil company the right to conduct seismic activity and gives the oil company the right to obtain oil and gas leases after the results of the seismic data have been evaluated. The lease form that will be executed is attached to the option agreement.

     In a "wildcat" area, the seismic data will probably condemn certain tracts of land. Once these tracts are determined, the company has the option but not the obligation to lease the land. Usually, the option to lease must take place within a certain period of time, e.g. six months.

     An upside to the seismic option method is that an entire area can be taken off of the market; prohibiting leasing to third parties until the area can be evaluated for potential drilling.

   - A Seismic Option can also be taken from an oil company that has an active lease in the area. This option grants the right to conduct seismic activity on that lease and the option to a farmin of the lease after the results of the seismic evaluation has been completed. This option also obligates the acquiring party to share the results of the seismic with the company who consented to the option.

3. ***An Oil and Gas Lease*** – Normally, oil and gas leases will grant the lessee the right to conduct geophysical activities on the leased land. The upside for taking leases is that only one signing bonus will be required and if the company can get in and out of an area quickly, they have a greater chance of not tipping their hand to competitors. The downside is that lease acquisition costs can be substantial and, at the end of the day, the seismic study might condemn the leased land.

Consent documents that allow companies to conduct geophysical activities should include all of the following elements:

1. Complete legal description of the lands
2. Term of the contract
3. Granting language including
   a. Right for lease acquisition if included
   b. Types of geophysical studies that can be done on land
4. Liabilities incurred for damage to surface lands of property
5. The right but not the obligation to conduct geophysical activity

If Sunrise or Venture were to enter into either a *proprietary* or *joint shoot,* the surveying company might use the **Sample Seismic Option Agreement (partial)** found on the following page. A complete option agreement can be found in the Addendum section of the book.