Cost Savings in Areas with Unproven Reserves: Risk = Reward in Big Oil

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Introduction

Exploration and Production (E&P) companies face a tremendous amount of financial risks nowadays with oil prices experiencing historical lows and large volatilities. Just like any businesses in the competitive market, maximizing expected future cash flows is the way for E&P companies to meet investors' return expectations and sometimes it may be the way to survive the harsh business environment. Oil and gas firms will not only consider the expected revenues to be successful, but also expected costs when make strategic investment decisions. With the advent of deep horizontal wells, the costs associated with exploration and production have gone through the roof. Simply drilling and completing the average one-mile lateral well has an average cost of approximately 4.5 million dollars in Grady or McClain county Oklahoma (SCOOP), two-mile lateral wells will double that cost. However, this exorbitant figure is not the only thing exploration and production (E&P) companies need to take into consideration. In these areas where high production levels are typical, but not guaranteed, oil and gas companies can have millions of dollars tied up before the bit even hits the ground. This article discusses the often overlooked but ever important costs associated with the land management process. Each play not only has its own geological characteristics but also the wells within it typically have similar associated costs and ownership (USGS, 2017). To illustrate the idea, the land management costs in two main plays will be compared and contrasted in the present work: the heavily explored and proven "SCOOP" in Oklahoma and the comparatively new and "unproven" Powder River Basin (PRB) in solitary Wyoming.

Land Management Process

There are six main land management processes necessary when drilling any oil and gas well in the United States: imaging, title, leasing/acquisition, obtaining title opinions, curative and payment; the landman is involved in all of these processes.

Before a company can drill a well, they must obtain the rights to do so; to do this they need to know who owns mineral, surface, and leasehold rights in the area where they plan to explore. For Title Landmen to be able to generate ownership reports they have to examine all relevant documents such as deeds, leases and assignments. These documents are kept of record in the offices of the County Clerk at the courthouse for the county where the land is located. In some Counties these documents are available online, in some Counties they are not. For the latter, the E&P has two options: to have Title Landmen run "Stand Up Title" at the County Clerk's office or have the relevant documents "imaged."

Running "Stand Up Title" is an industry term which refers to a Title Landman going to the courthouse and running title there. The Title Landman physically pulls each book from the shelves, and researches ownership from the origins of title (Patent) to present. From this method, the E&P does not have the ability to examine these documents themselves to "check" the work of the Title Landman.

Having the relevant documents "imaged" involves sending an imager (or imagers) to the County Clerk's office and taking pictures of those documents. Imagers need to have a rudimentary knowledge of Title in order to know what constitutes a relevant document, but they are generally not considered "Landmen." The E&P will have copies of all of these documents to "check" the work of the Title Landman, as well for reference for later steps.

Whichever method the E&P chooses, the Title Landman examines all relevant documents and prepares an ownership report for the client. This includes surface owners, mineral owners and leasehold owners in a particular area. The SCOOP and PRB horizontal wells are typically one- or two-mile lateral wells, and occasionally three- and even four-mile lateral wells. The area "drained" by these wells is determined by geologists for the oil and gas companies and is confirmed/approved by state regulatory agencies. The area "drained" by these wells is referred to as a "Unit."

Once it is known who the owners are in a target area (Unit) the E&P company needs to obtain the rights to drill from the owners of record. This step is called leasing and acquisition and is typically performed by a Leasing Agent (Landman). Leasing Agents can obtain the rights through a mix of the following 3 ways:

Obtaining oil and gas leases from mineral owners

Each mineral owner is typically paid a bonus at the time of leasing

ie: $5500 per mineral acre

And is given a royalty interest which will be paid based on future production

ie: 1/8th Royalty

Purchasing mineral rights from mineral owners

The E&P purchases the mineral rights outright

ie: $15000 per mineral acre

Obtaining Assignments of existing (valid) oil and gas leases from other E&Ps

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The E&P purchases the lease outright
The E&P purchases rights to certain depths

After an E&P company begins to obtain the necessary rights, they will typically order a Title Opinion. Title opinions are generated by bonded attorneys (Title Attorney) who reexamines all relevant documents and verifies (or contradicts) the work of the Title Landman. In effect, verifying that the company has obtained all necessary rights to proceed with their plans to drill. If there are title issues of record, the attorney then comments on them and makes requirements for landmen to "cure".

Curative involves contacting owners and obtaining necessary documents to resolve title defects. Frequently, these requirements involve determining and contacting the heirs/devisees of mineral owners who are deceased. In these cases, the heirs have not filed the proper documents of record to pass title from the decedent to his or her heirs. Passing title to these heirs and obtaining leases from them is part of the Curative process.

It is always in the best interest of the E&P to obtain as much interest as possible in agreement with the mineral/leasehold owners; however it is not always possible to obtain 100% working interest in a Unit through leasing (for example an owner cannot be found or refuses to deal). If these rights cannot be obtained, the E&P can obtain the rights through a legal action known as forced pooling. Ideally, this occurs prior to the E&P spudding (starting to drill) the well, and ownership of the well will be established. Force Pooled parties are offered terms in line with the leases obtained by other mineral and leasehold owners within the Unit (or surrounding areas). Additionally, in lieu of leasing or selling to the E&P company, a mineral or leasehold owner can elect to participate in the well and pay their fair share of the drilling costs.

Finally, each owner is put into a comprehensive final (and slimmed down) ownership database called a JIB (Joint Interest Billing) or Pay Deck for the Unit. The Pay Deck shows how the revenues generated from sales of petroleum product are to be distributed. This step is usually performed by an in-house landman who works for the E&P company rather than an external service provider or law firm which typically perform all the preceding steps.

Associated Costs: Proven v. Unproven

The costs associated with performing the services discussed in the preceding section vary greatly from play to play. To begin discussing the costs, a brief history of the two areas of interest is in order.

McClain and Grady Counties in Oklahoma (now part of the SCOOP and STACK plays) are heavily explored oil fields in central Oklahoma that have seen extensive exploration and production since soon after the state's founding. As a result, landowners quickly learned the value of the minerals in the area and the rights became severed from the surface as early as the 1920's through 1940's. In many cases minerals were bought, sold, and broken up into tiny fractions. One of the authors has examined fractions as small as 1/42,972nd of 1.00 acre mineral interest.

Most of the early, shallow, wells drilled between 1920 and 1950 are no longer producing. However, a later round of exploration, mostly drilled in the 1960s, 1970s, and 1980s, resulted in numerous countless successful traditional style oil and gas wells that are still producing. Consequently, the oil and gas leases taken prior to these wells being drilled are still valid and effective. In these instances, not only do the Title Landman and Title Attorney need to determine the current mineral ownership, but they need to determine who owns the rights to the oil and gas leases taken 50-70 years ago as well. From a title perspective, this increases the level of difficulty, time and possibility of mistakes exponentially.

Further, this area was one of the first targets and played a huge role in the development of the modern "shale boom" or advancement and increase in prevalence of deep horizontal drilling and fracking techniques. Competition between E&Ps was rampant. Many companies, in an effort to acquire as much acreage, as quickly as possible, resulted in bad leases, bad assignments, and assignments of various depths. This compounded the problems and added a whole new complex layer to the ownership of oil and gas rights in the area.

On the other hand, the Powder River Basin in Wyoming was completely unexplored until the late 1960's; it does have some older traditional wells from that period but the number of them and their production quantities were far less than those in Oklahoma and the overall "gold rush" effect was not near as great, with only a few major companies controlling the area (Gordon et al, 1990). This has resulted in much simpler ownership and in many cases the minerals remain unsevered and in the hands of surface owners. The play's potential for horizontal shale wells began to pique the interest of E&P companies as early as 2009 and title is beginning to get more complex, but it pales in comparison to the SCOOP.

Combing through countless file folders containing images from both areas reveals that on average in the SCOOP there are anywhere from 1,500-10,000 images per section and in Campbell county Wyoming the folders contain around 7,000-14,000 on average. However, the online data bases in the SCOOP are more complete (or useful/better organized) resulting in less required imaging. Also, it should be noted that in the Powder River Basin, landowners typically own huge swaths of land and there can be hundreds of pages to each instrument consisting of only legal descriptions. This can occur in the SCOOP too though to a much lesser extent. Further, the image folders examined in the SCOOP did not contain these "long docs" (instruments with more than 25 images), while the folders for Wyoming did; so the discrepancy may not be as high as indicated here. Imagers typically shoot around 500 images a day and their services usually cost around $250 per day. Being conservative

for the SCOOP and liberal for the Powder River Basin an E&P company is probably looking at around $1,500 and $3,500 per section for preliminary imaging services in each area, respectively.

Moving onto the generation of ownership reports is where the costs really start to look starkly different for each play. Sections in the SCOOP usually contain hundreds of different mineral owners and numerous leasehold and overriding royalty owners; while sections in the Powder River Basin may contain as little as one mineral owner (who also owns the surface) and one lease with two leasehold owners. It typically takes a landman around 1-3 months to generate an ownership report in the SCOOP while only 1-3 days in Wyoming. Simple explanations of the contents of two real ownership reports for the SCOOP and the PRB area are attached hereto as Exhibit "A" and Exhibit "B" respectively. Landman services are typically around $450 per day to the E&P company so an average report on a section in the SCOOP costs anywhere from $15,000 to $50,000 while only around $1,000 in the Powder River Basin. The story is similar when looking into the leasing, curative and payment portions of the process.

Finally, the bulk of the land management costs come in the form of legal fees for the generation of title opinions. Attorneys usually bill around $250 per hour and they typically take longer than landmen to generate reports due to being more thorough and writing lengthy comments and requirements. A typical title opinion for a section in the SCOOP is anywhere from 500-3,000 pages long depending on the complexity of title and the wordiness of the attorney and takes around 4-6 months to generate. Further, E&P companies must obtain multiple title opinions during the process, namely an original title opinion containing the groundwork, a drilling title opinion prior to drilling and a division order title opinion prior to payment. After all these are completed opinions on a typical section in the SCOOP can cost on average anywhere from 200,000-600,000 dollars depending on the complexity of title and the attorney. In stark contrast this process usually costs around 35,000-50,000 in Wyoming.

Limitations

The present work fails to address the stark differences in leasing and acquisition costs between the two areas. Owners in the SCOOP typically demand much higher prices for purchasing leases and minerals, easily driving pre-drilling costs into the millions. Further, average burdens on the leases are typically higher in the SCOOP as well, as mineral owners demand higher royalties and preceding leasehold owners commonly reserve overriding royalty interests.

Future studies could go more in depth into these costs in the subject plays and break down where the E&P company needs to percentagewise break even on the well. High royalties and high participation rates in the SCOOP dramatically eat into the profitability of an oil and gas well and play a role just as important, if not more important than the costs of services analyzed in this article.

Conclusion

Commonly overlooked costs necessary in drilling oil and gas wells are attributed to services involved in the land management process. These costs can vary greatly from play to play, this article has focused on these costs in two starkly different areas: the Oklahoma SCOOP and the Powder River Basin in Wyoming. The table below summarizes the findings (associated costs per Section [i.e., one square mile]):

Service	SCOOP - OK	Powder River Basin - WY
Imaging	$1,500	$3,500
Ownership Reports	$20,000	$1,000
Leasing and Acquisition	$20,000	$1,000
Curative	$20,000	$1,000
Title Opinions	$300,000	$50,000
TOTAL:	**$366,500**	**$56,500**

As shown the costs of land services in areas with proven reserves like the Oklahoma SCOOP are dramatically higher than those in newer developing plays like the Powder River Basin in Wyoming. A typical horizontal well will have a unit consisting of two sections, so by doubling the numbers shown above one can get a rough idea of the per well costs; though it should be noted that these can vary widely and the estimates above are based on broad generalizations and may lean rather conservative. Compounding this problem further, leasehold burdens are typically much higher in areas proven reserves as well.

Trusting the gut of a geologist and getting into a play early can save oil and gas exploration companies hundreds of thousands on land management services per well. Being that a large company will typically drill tens to hundreds of wells in a play, these savings can add up and start to look real tempting for anyone in the finance department.

References

Gordon L. Dolton, James E. Fox, and Jerry L. Clayton, (1990) Petroleum Geology of the Powder River Basin, Wyoming and Montana, US Geological Survey, Open-File Report 88-450.

U. S. Geological Survey-2017-111 at 1-78 (2017).

What is the STACK/SCOOP. (2020, January 09). Retrieved from https://epusenergy.com/what-is-the-stack-Scoop/

Exhibit "A"

Example of Title in the SCOOP Play:

The index for one Section in the SCOOP Play shows 1688 individual instruments (deeds, mineral deeds, leases, and assignments) to examine to determine current ownership. This Section had 10 wells that were drilled in 1953, 1954, 1955, 1961, 1983, 1984, and 1985. Only two of the wells were active and producing, and these Units only encompass 80.00 acres each. However, due to the terms of the leases, and the formerly producing wells, these two wells held the leases covering 420.00 acres by production.

The ownership report:

- has 17 mineral tracts
- is 182 pages long
- has more than 50 notes regarding title issues

The title was so complex, and the first Title Opinion obtained was so erroneous that a new Title Opinion from a different attorney had to be obtained (each costing more than $500,000.00).

The Second Title Opinion:

- has 17 minerals tracts
- is 867 pages long
- contains 97 Curative Objections and Requirements

The Pay Deck for the client's well has:

- 1297 Royalty owners
- 620 Leasehold owners
- 118 Overriding Royalty Interest owners

Exhibit "B"

Example of Title in the PRB Play:

In one Section in Campbell County, Wyoming, there were 312 individual instruments (deeds, mineral deeds, leases, and assignments) to examine to determine current ownership. This Section had 9 wells that were drilled between 2011 and 2019. All of these wells are still producing.

The ownership report:

- has 3 mineral Tracts
- is 49 pages long
- has 5 title notes regarding title issues

The Title Opinion the client obtained:

- is 53 pages long
- contains 16 Curative Objections and Requirements

The Pay Deck for the client's well has:

- 5 Royalty owners
- 3 Leasehold owners
- 2 Overriding Royalty Interest owners