To Work or Not to Work, That is the Question!

Why It Is Financially Better To Own A Portfolio Of Producing Oil & Gas Working Interest Instead of Producing Royalty Interest

by: Paul Anthony Thomas
Certified Professional Geological Scientist
Oil & Gas Producer
Registered Landman

Throughout my 30 year career of owning, managing and investing in various types of producing oil and gas properties around the world, it is my firm belief, supported by factual evidence, that owning a portfolio of oil and gas working interests in sound producing properties is a far better value investment and will create and maintain wealth at a greater pace than owning a comparable royalty interest in the same group of properties. There are many aspects of this type investment that will be discussed in this paper. When these variables are all combined together, the conclusion will be that it is ***Better To Work, Than Not To Work!***

The Types Of Ownership Defined...

In the oil and gas production business, there are two types of owners: those who pay the expenses of producing oil and gas (Working Interest owners) and those who get carried for their ownership in the production of oil and gas (Royalty Interest owners). The Working Interest owners are responsible for paying 100% of the costs of leasing, researching, drilling and completing the production facilities (including installation of the wellbore), extracting, selling and managing the hydrocarbons. The Royalty Interest owners receive their share of the resulting production as a Royalty and are not responsible for any of the cost of developing or maintaining the facilities or equipment that produce the revenue stream. The only thing that a Royalty owner is responsible for are the taxes due on their share of the production income.

This major difference, known as paying the bills, is where the value disconnect occurs with the investing public. A typical investor sees the purchase of a royalty, which is free and clear of any operating expenses, as a lower risk investment than a typical Working Interest. This is more of a psychological bias than a proven fact. This paper will prove that assumption to be false.

When a prospective location that might contain oil and gas in commercially paying quantities is identified, that location is always on someone's land (yes, even the sea is underlain by land). The landowner might own 100% of the minerals beneath the land, or s/he may own none at all. In a majority of the world, the government owns all the minerals beneath the land and supposedly uses the revenues derived from oil and gas exploration and production to support the society.

In the US, the rights to explore and extract the minerals under the land are bought, sold and traded beginning with a document known as a "*base lease*"[1]. This *base lease* is the original agreement that is executed by the owner(s) of the minerals and the original purchaser of the rights to explore the land for its mineral content. This lease states the terms by which Oil and Gas will be explored for and extracted from the land, the term for which the lease is in effect and the lands covered by the lease agreement. After proper execution by all parties and the exchange of goods and services or money, known as a bonus payment, this *base lease* is officially recorded in the records of the governing body that manages land transactions within the jurisdiction. If the land that is described on the lease is in two jurisdictions, then the document is recorded in both jurisdictions (in Texas, if the land falls on a county line, it is recorded in both counties). Once oil and gas production in commercial quantities is established under this lease agreement, the lease term is extended until commercial production ceases.

The owner(s) of the minerals becomes the Royalty Owner by executing this base lease. They called a royalty owner because within the lease document is a royalty clause which states that the owner of the minerals will receive a certain percentage of any commercially produced and paid for hydrocarbons that are produced from the land. This percentage is known as the royalty percentage. For decades, traditional royalty percentages in the oil and gas industry were 12.5% (1/8th) of the gross revenue, but today, royalties can range as high as thirty-five percent (35%) for some onshore leases. I once bid 79% royalty on an acreage block owned by the State of Texas which was located adjacent to an excellent shallow oil field, only to be out bid by another operator who bid 85% royalty for the same acreage. Needless to say, landowner and mineral owner royalty percentages vary from state to state and location to location.

Fractional Ownership…

Once a lease has been agreed to and recorded in the governmental records, it is time to drill the initial well on the land covered by the lease. This can be done by one investor, but in most cases, a group of investors, led by a knowledgeable oil and gas operator will pool their resources together to come up with enough money to drill the initial test well on a lease. As you can imagine, there are thousands of variations of oil and gas fractional ownership, each with its own risk profiles and characteristics.

The investors, be them individuals or other oil and gas companies, each agree to pay a certain percentage of the total expenses of the initial test well for their pro-rated share of the Working Interest in the lease (100% of the production revenues minus the portion, or royalty, that goes to the landowner/mineral owner). The percentage that remains after the landowner/mineral owner carve off their share of the production is known as the *net revenue* of the lease.

Industry Bias Does Not See The Big Picture…

To the outside investor who does not understand the various risks associated with oil and gas exploration and production, it is easy to reach the conclusion that Royalty ownership is a less risky way to directly participate in the oil and gas asset class than owning a working interest, but this is simply not true, mainly because the initial investment to purchase a royalty is frequently twice the amount needed to purchase the same working interest ownership (see table below). The amount of this initial investment increases the risk of the investment greatly.

At the point in time when an investor owns an interest in one lease, the risk of that one cash-flow ceasing is equal for both the Royalty and the Working Interest, because when the well ceases production (goes down), neither the royalty owner nor the working interest owner are receiving any revenue from their investment. Given that the cost of entry is dramatically different, the working interest owner is in a much better position to weather the total loss of his/her investment.

Comparison Of Financial Returns From A Typical Well…

As the chart below points out, the fact that buying 1% in a typical lease Royalty will result in total returns and after tax returns much less than can be captured by the purchase of a 1% Working Interest in the same lease. In addition, the financial risk (Standard Deviation of Returns) associated with the ownership of a royalty is greater by one full percentage point.

WORKING INTEREST - VS- ROYALTY INTEREST

Same Producing Lease In West Texas

1% Working Interest	(assumed 39% tax rate)	***1% Royalty Interest***
318.71%	Total Gain - 5 Year Period	169.78%
183.95%	Total Before Tax Return - 5 Year Period	88.03%
77.67%	5 Year Before Tax IRR	36.03%
17.76%	5-Year Before Tax Standard Deviation	14.74%
33.15%	5-Year After Tax IRR	21.54%
8.80%	5-Year After Tax Standard Deviation	9.84%
24.35% - 41.95%	**After Tax Range of Returns**	**11.70% - 31.38%**

Source: Petroleum Growth Fund Accounting and Well Production Records

Given these facts, when an investor takes the next step to diversify his holdings with the purchase of multiple working interests in multiple leases spread across multiple pay horizons, multiple operators and multiple locations, the risk of losing money is greatly lowered and the potential to make more money is greatly increased.

In my career, I have seen wealth created thousands of times in both the royalty ownership portion of a producing lease when a nice well is discovered on someone's land and in the working interest portion of producing lease ownership, where an investor will buy-in to a drilling program and the program is successful. Throughout history, as a general rule, more wealth has been created through the Working Interest side of the equation than the Royalty side of the ownership. This is generally because the working interest side of the equation is a much larger total ownership positions in the production revenues, but also, the working interest owners have much more of a say-so in the maintenance of the asset and the management of the lease. Since they pay none of the expenses, Royalty owners have virtually no input into the decisions to maintain the lease and well-bore.

The Typical Well in a Portfolio…

In 2009, according to the US Energy Information Agency (USEIA), there are 526,000 producing oil and gas wells in the continental United States, with the average production from an existing producing well in the United States being 10.1 barrels of oil equivalent (BOE).[3]

With regards to the typical well used in this research, the parameters of this well are as follows:

- *Net Revenue of the Lease is 78% (22% of revenue to the Royalty Owners -vs- 78% of revenue to the Working Interest).*
- *Daily average production of the lease over the 5 year holding period was 9 barrels of oil per day. One barrel of oil contains 42 US gallons of fluid.*
- *Daily average production of the lease over the 5 year holding time was 2 Mcf of gas per day.[2]*
- *All gas production is delivered at the market price as it is produced.*
- *Oil is stored on lease until it is sold by the truckload. Prices for oil are established on the day the oil is picked up by the purchaser at the lease storage facility.*
- *The lease operating expenses[4] are taken into account each month and are considered in the calculation of the initial purchase price and the sales price upon exit.*
- *The actual lease revenue and expenses were used to calculate actual returns to the owners in the lease.*
- *This lease was "worked over" 1 time during the 5 year period, which is typical for an average producing lease.*

The Money Is Made When You Buy…

Upon examination of these research results, it becomes obvious that the major variable in the calculation is the purchase price. Because the Royalty interest does not carry any burden of operating expenses, the investing public has a very strong bias that a Royalty is a much better and safer investment than a Working Interest. Data in this paper has shown that, given all things being equal using the market price of these assets, a Working Interest not only has a lower after tax risk factor (Standard Deviation of Returns), but the investment in a Working Interest posts a total after tax return as much as 10% greater than a Royalty Interest.

Insurance Plays A Definite Role In The Management Of Risk…

Investors will state that there are many uncertainties with regards to owning a working interest that are not present when you own a Royalty Interest. This fact is true, but is it the opinion of the writer that an annual return that is 10% greater more than compensates for the uncertainty associated with the ownership of a Working Interest. As will be discussed, these uncertainties are very low risk to the Working Interest owner and are managed by the lease operator.

If you choose sound, prudent Oil and Gas operators that pay attention to their business, the fact that a spill happens on an oil and gas lease is at most a minor inconvenience, not a catastrophic event.

Some of the more obvious uncertainties that are associated with an oil well are discussed below:

Total Loss Of The Well which would include a cave in of steel pipe that lines the well (casing) or the development of a hole in the casing that cannot be repaired. This is of equal risk to both parties for when a well goes off line (stops producing or goes down), then neither the Royalty owner nor the Working Interest owner are making any revenues. Actually, this is of greater risk to the Royalty owner, because his investment is much greater in this wellbore. During my 30 year career, dealing with thousands of wellbores in many varied environments, I have encountered this happening one time.

Plugging the Well after it ceases production. In most cases, the closing or plugging of a well will occur when the economic life of the wellbore has been reached (when operating expenses have become greater than total working interest revenues). Plugging consists of removing any salvage steel casing and pumping a cement slurry at several depths down the wellbore. A well that has ceased production generally has steel tubular and surface equipment (tanks, fittings, pipe, ect.) that has a salvage value. On land, as a general rule, the salvage of equipment from a well will help offset some, if not all, of the expenses of plugging a well. Any plugging expenses that are not covered by the salvage value are due and payable by the Working Interest owners as a final settlement expense of the investment. This cost is generally built into the purchase price of the Working Interest and the risk is discounted greatly due to the fact it will happen years into the future after the purchase.

Blow-out of the Well during a work-over.[5] Sometimes, during the workover of a well-bore, an instance will occur where the pressure becomes to great under the ground and the work over crew will be negligent, causing a blow-out of a producing well. Although rare, I have seen this occur during the work over phase of operations 5 times in my career of monitoring thousands of work-overs. I have not seen it occur since the mid-1980's with reputable companies. The risk of a blowout during work-over occurring is extremely low. The Operating Agreement that governs the lease requires the operator to carry insurance covering the operations of the lease, including work-overs and blow-outs. As a third level of security, a Working Interest portfolio will carry liability insurance to cover mishaps of this type. General liability insurance policies covering these type incidents generally have a $1,000,000 per occurrence limit.

Environmental Hazards. Infrequently, chemicals or waste will spill onto the ground from an oil and gas production facility or pipeline. The two primary contaminants present during an environmental spill are liquid hydrocarbons and/or saltwater which are produced from the lease and flow through the pipeline. When a spill occurs, the lease operator is responsible for cleanup of the spill. If he is paying attention to the lease operations, and attends to the spill quickly and efficiently, the working interest owners will be responsible for payment of the cleanup expenses. When this happens, these expenses are generally very low. If the Operator is negligent and does not take care of the spill in a timely manner, then he will be solely responsible for the cleanup of the spilled liquids and payment of all the bills (this falls under the operator negligence clause in the Joint Operating Agreement that governs the management of an oil and gas lease). Also, under the Joint Operating Agreement that governs the activities of managing an oil and gas lease, Operators are required to carry liability insurance that

covers such mishaps. Generally, the liability umbrella carried by operators to cover lease operations and environmental spills will be a minimum of $1,000,000 per occurrence (greater for off-shore operations). This insurance amount is, generally speaking, more than adequate to cover any accidental release that will occur on an on-shore lease in the US. The risk of this mishap making a significant difference in the investors returns are extremely low.

In summary, there are mishaps that occur in the oil and gas production business that do add risk to ownership, but as a general rule, between the Working Interest owner and the mishap, there are several levels of liability insurance that do protect the investment and manage the risk of ownership.

In Conclusion…

The data presented prove, in the mind of the writer, that it is better to buy and own a working interest in an average producing oil and gas lease than a royalty in the same lease.

Data & Results…

Lifecycle Cash-flow and IRR for Producing Oil & Gas Interest
1% Royalty Interest -vs- 1% Working Interest
Purchased On The Same Date.

1% Royalty Interest -vs- 1% Working Interest Typical Oil & Gas Well Chosen From An Actual Portfolio of 300 Producing Properties

	Purchase April 1st 2005	Year 1	Year 2	Year 3	Year 4	Year 5	5-year totals	% Return	Std Dev (SD)
Royalty Interest	$ (8,400.)								
Net Income		$ 1,432.92	$2,208.99	$ 2,083.14	$ 2,507.67	$ 1,603.22	$ 9,835.93	117.09%	
Value		11,463.32	17,671.92	16,665.08	20,061.35	12,825.78	12,825.78		
Increase In Value		3,063.32	9,271.92	8,265.08	11,661.35	4,425.78	4,425.78	52.69%	
IRR			**71.32%**	**61.15%**	**39.48%**	**36.03%**			**14.74%**
After Tax									
-Income		$ 742.97	$1,145.36	$ 1,080.11	$ 1,300.23	$ 831.27	$ 5,099.93	60.71%	
-Value		11,463.32	17,671.92	16,665.08	20,061.35	12,825.78	12,825.78		
-Value Increase		1,588.33	4,807.49	4,285.45	6,046.41	2,294.77	2,294.77	27.32%	
After Tax IRR			**45.13%**	**38.62%**	**24.11%**	**21.54%**			**9.84%**
Working Interest	$ (3,900.)								
Net Income		976.67	1,824.76	1,779.52	2,170.38	$ 1,225.90	$ 7,977.23	204.54%	
Value		7,459.47	5,411.98	7,822.04	3,447.14	8,352.58	8,352.58		
Increase In Value		3,559.47	1,511.98	3,922.04	(452.86)	4,452.58	4,452.58	114.17%	
Before Tax IRR			**97.74%**	**125.01%**	**86.84%**	**77.67%**			**17.76%**
After Tax									
-Income		506.40	946.14	922.68	1,125.34	635.63	4,865.11	124.75%	
-Value		7,459.47	5,411.98	7,822.04	3,447.14	8,352.58	8,352.58		
-Value Increase		1,845.58	783.96	2,033.58	(234.81)	2,308.66	2,308.66	59.20%	
After Tax IRR			**46.90%**	**22.31%**	**36.85%**	**33.15%**			**8.80%**
OIL-NYMEX	**$ 33.79**	**$ 61.06**	**$ 60.85**	**$ 95.95**	**$ 44.60**	**$ 79.35**			
GAS-NYMEX	**$ 5.80**	**$ 9.08**	**$ 6.76**	**$ 6.97**	**$ 5.87**	**$ 5.82**			

Source: Petroleum Growth Fund Accounting and Portfolio Production Records.

.

Assumptions used in this paper.

Cash-flows purchased on same date using the same price deck and industry standard purchasing practices.
5 year holding time for the invested capital.
RI = Royalty Interest
WI = Working Interest
WI Net Revenue = 78%
39% Federal Income Tax Rate
15% Depletion Allowance
Purchase is what the typical market price would have been at time of acquisition (Engineered using PHD Win).
Income Numbers are actual. Taxable income numbers are estimated.
Sale occurs in January of the exit year at the Dec 31 calculated price.
Each IRR calculation assumes a sale of the property in January of the following year at the calculated value.

1. In the United States, the term *base lease* referrers to the initial lease executed with the landowner/mineral owners. In a majority of the remainder of the world, the government issues the rights to explore for oil and gas using a "concession" document that outlines the royalty, term, provisions and rules governing the exploratory program. Generally, under a concession, if commercial production is found, then the productive area is converted to a formal lease agreement at the end of the primary term of the concession. Concessions (rights to explore) are generally issued in terms of 5 to 20 years, depending on the parties to the agreement, the initial plans and initial budgets set forth.

2. Natural gas is measured in one thousand cubic feet increments. 1 Mcf = 1000 cubic feet of natural gas at atmospheric pressure.

3. Reference: http://www.eia.doe.gov/aer/txt/ptb0502.html

4. Lease Operating Expenses (LOE) consist of the expenses that are incurred by the lease for monthly operations and include: electricity, daily wellsite visitation by an employee or contractor (Pumper or Gauger), operator overhead, chemical treatments, Insurance and any other expenses that are allocated to the lease during a calendar month. These lease operating expenses are deducted from the revenue calculation to obtain the net income from the lease for a working interest owner. Royalty owners do not pay any LOE costs.

5. Occasionally, producing oil and gas wells must be maintained or worked over. This activity is completed by a piece of field equipment called a work-over rig, operated by oil field professionals. In today's business environment, all reputable work-over rig operators use blow out preventers during their work-over operations. Also, these work-over companies carry liability insurance to cover blow-outs and mishaps that might occur. Generally, the liability umbrella carried by all parties concerned in the work-over operation will be a minimum of $1,000,000 per occurrence (greater for off-shore operations).

Original Written: 10-25-2010