

APPRAISING OIL & GAS PROPERTIES

A Newsletter for Appraisal Professionals

Richard J. Miller & Associates, Inc.

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How I Spent My Summer Vacation

Did you ever have to write one of those essays when you were in school? Like a 10-year old keeps a journal! How many times call you say you went to the park, played HORSE with Hank and Teddy, smashed frogs at the pond, went to the shore, rode your bike all over town, got the (check one): mumps__ measles__ chicken pox__, stayed outside catching fireflies while the folks watched Ed Sullivan, and generally ran yourself to a frazzle. There is a C&W song about missing Billy the Kid. Growing-up can be boring.

Did you ever have a really bad idea? I had one. Well, more than one actually. I decided that I (we) could paint the outside of the Cedar Chateau ourselves. The last painter did a lousy job - and I figured that I could not do any worse. For the past few years I have been trying to create level places for ladders which, considering the cabin is on a 90° slope, has not been easy. But we (I) were going to do this job right - clean off all the checked and peeling paint, replace damaged siding, fascia boards, and trim; patch the 10,000 woodpecker holes; and use the best paint that we could find On Sale. That was in May - "Don't worry. Hon, we'll be done afore the snow flies." We had our first snow a few weeks ago (November 8); we are not quite done. About half-way. As someone pointed out, the house looks like one of those paint-by-numbers things. I will spare you the details - like the paint that jumped off the wall when I waved the scrapper at it and juggling 4x8 sheets of siding 3 stories up a ladder. Not my best idea. But we will prevail, probably by next Labor Day.

WE were supposed to spend some time in tax hearings this summer but they either, got settled or continued. So, I embarked oil research for the WSPA sales study, finished a few, other projects, and caught up on some reading. The latter includes a new book on geology by John McPhee and a new text on Cost-of-Capital (see Book Review) but I also found a few oldies. I ran across an copy of "Inherit the Wind." This is a play about the Scopes Monkey Trial back in the 1920's which was made into a movie with Spencer Tracy. Both play and movie are thought-provoking, entertaining, and useful. I am sometime asked how to prepare to be an appraisal witness in court or elsewhere. I always suggest renting "My Cousin Vinny" which not only portrays the legal process in action and demonstrates expert testimony technique, but also provides some wonderful one-liners and comeback phrases that I would love to be able to use one day. I would also recommend "Inherit the Wind." If there was ever a demonstration of how to overcome the "Don't confuse me with the facts - I know what I believe," mentality - this is it. Puts me in mind of an tax appeal hearing back in '08 - never mind.

Speaking of court cases, there are a bunch of opinions to review relating to appraisal practice; which leads unavoidably into a bit of soap-boxing about professional work. We also got a letter from our field correspondent. Rocky Stone, about conditions out in the Patch. In recent newsletters we have had some fun while exploring issues such as regulatory costs, reserves, and fair market value but it may be time to take a look at some serious subjects in a more somber tone. In

this issue we start a series on the three methods of value, and a two part discussion of evaluation professionalism. So pull up a log - watch out for paint - and set a spell.

Appraisal: Art? Science? or Profession? Part I

Over the past 4+ years, our little newsletter has been searching for the answer to **The Question**: "How do I estimate the value of an oil or gas property?" A worthy endeavor, don't you agree? Our path to date has been a ramble over the hills and through the valleys of the appraisal process with occasional respites to admire the flora and investigate the fauna cavorting about on the landscape of oil and gas property evaluation. Along the way we have several times crossed the bridges that link engineering and geology with the less finite, but equally important, studies of finance and economics and, not least, with the requirements and expectations of the appraisal profession. Answering **The Question** requires more than a knowledge of the reservoir and fluid characteristics or production history of a property; it requires some insight into why buyers and sellers act the way they do or, more specifically, consideration of the financial/economic criteria that influence value at a point in time. It also requires familiarity with those methods of estimating value which are appropriate to the purpose of the evaluation. Finally, it demands that a certain amount of professionalism be used when aggregating all the parts.

It can be useful on occasion to lean back and, before nodding off, contemplate the changes being wrought in our profession. Unfortunately, far too much of this circumspection occurs as the result of events in the legal arena. Besides, thanks to the S&L debacle and USPAP, there is more and more court intrusion. Personally, I am not all that crazy about court directed criteria for anything - particularly not my profession. The worst evaluator knows more about appraisal than most judges. But that doesn't mean that we should be ignorant of what goes on outside our cozy confines. In the past we have discussed the Daubert/Robinson criteria for expert testimony and their application to the appraisal process. Several court cases involving appraisal standards have been reported over the past few years which provide some insight into the nature of Appraisal expertise, at least insofar as the courts see it. Two recent cases have come up which are also important to this issue. These cases are important to appraisers because they are directly related to whether appraisal testimony is worthy of consideration as "scientific" evidence, thereby qualifying for Daubert coverage. Readers should not be put off by our discussion of court approved forms of testimony and evidence. To a large extent these legal outcomes are a reflection of and on the methods and procedures that we use everyday, even if we never venture near a courtroom. Federal court results have a way of filtering down to the state courts and, sooner or later, influence administrative and other judicial hearings. These issues are raised here as a context for examining the overall evaluation/appraisal process.

Four federal court cases that were reviewed by Hoyt and Aalberts (The Appraisal Journal, Oct. 97) are summarized here. In each case, the Daubert criteria were applied to appraisal testimony. In *Joy v. Bell Helicopter Textron, Inc.* the appeals court reversed a district court which had allowed an expert for Joy to present evidence of damages based on the appraisal of a single piece of property with no reference to the prevailing market for that property. Bell argued that the appraisal testimony should be excluded as being "...based solely on guesswork, speculation, and conjecture." The appeals court agreed with Bell's characterization in the reversal opinion but also noted that its conclusion was unaffected by the "recent" Daubert decision. The court noted that

Daubert was an outgrowth of Rule 702 of the Federal Evidence Code which permits an expert to testify only when scientific, technical, or other specialized *knowledge* will assist the trier of fact, and that the word knowledge connotes more than speculative belief or unsupported speculation." [emphasis in original] The court did not think that Joy's expert demonstrated the requisite *knowledge*. In short, testimony or an appraisal that fails to reveal an adequate base of knowledge should be dismissed without the necessity of referral to Daubert. [999F. 2nd 549 (D.C. Cir. 1993)]

In *Frymire-Brianati v. KMPG Peat Marwick*, a U.S. Appeals Court found that expert witness testimony regarding the value of a property, should have been excluded under the Daubert criteria because the method of appraisal was wrong and not reliable and, further, that the trial court should have so determined at a pre-trial evidential hearing. The Appeals Court cited Daubert stating that a "... trial judge must ensure that any and all [expert] testimony or evidence admitted is not only relevant, but reliable." A judge is required to undertake "...a preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts at issue." [2F. 3d 183(7th Cir. 1998)]

In *14.38. Acres of Land v. United States*, a condemnation case, the court upheld a trial court which, using Daubert criteria, disallowed the testimony of an expert appraiser because the testimony was based on speculation, not on a reliable foundation, and was of no aid to the finder of fact. The appeals court referred to Daubert and noted that, "if the expert's opinion is not soundly based and is not relevant, then the opinion must be excluded." The court further held that the Daubert decision "...is totally in concert with that of the *Olson* court, which... held that elements affecting property value which are within the realm of possibility, but not reasonably probable, should be excluded for that would allow mere speculation and conjecture to become a guide for the ascertainment of value." [884 F. Supp. 224 (N.D. Miss. 1998)] [Olson, 292 U.S. at 257, 54 S.Ct at 709]

In *Newport Limited v. Sears, Roebuck & Company*, an economics expert for Newport used a multiple regression model to calculate the absorption rate for an industrial park property whose value was at issue. Sears, citing the method used to analyze the available data argued that, under Daubert criteria, the expert testimony should not be allowed. The trial court allowed the testimony and the appeals court agreed. The appeals court decision cited Daubert to the extent of listing the primary criteria that were contained in the Daubert decision. The opinion in this case is a textbook example of applying the Daubert guidelines to specific evidence to test the reliability of that evidence as an aid to the court. [No. 86-2319, U.S. Dist. LEXIS 7652]

Hoyt and Aalberts note that, "Real estate witness' who formerly rendered 'expert' opinions based predominantly on their speculations or reputations and then relied on juries to weigh this information now must base their conclusions on better data. Further, if results, such as projections, must be proven, as in the *Joy* case, the *Daubert* requirements of complying with accepted scientific methods will need to be fulfilled."

The four cases discussed above are from 1993 and 1995 decisions issued shortly after the Daubert decision in 1993. More recent cases act to both clarify and muddy matters.

In *General Electric v. Joiner* (1997) the U.S. Supreme Court upheld a District Court ruling that disallowed expert witness testimony in a cancer case because "... expert's testimony had failed

to show that there was a link between exposure to PCB's and small cell lung cancer..." The issue, as framed by Rehnquist, was "...whether these experts opinions were sufficiently supported by the original studies on which they purported to rely." Further, "Trained experts commonly extrapolate from existing data. But nothing in either Daubert or the Federal Rules of Evidence requires a district court to admit opinion evidence which is connected to existing data only by the **ipse dixit** expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered." According to a usually reliable source **ipse dixit** means. "He himself said it, " Must be an Irish term. [U.S. 1185. Ct. 512, 139L. Ed. 2nd 508 (1997)]

The U.S. Supreme Court has accepted for review *Carmichael v. Samyang Tire Company* in which testimony by an expert for Carmichael in tire failure was excluded by the trial court because it did not satisfy the Daubert criteria. Carmichael appealed that the Daubert criteria should not have been applied because the expert was not testifying is to "scientific" evidence. The appeals court reversed the trial court saying, in part. "What then is the difference between scientific and nonscientific expert testimony?" In short, a scientific expert is a expert who relies on the application of scientific principals, rather than on skill - or experience - based observation, for the basis of his opinion." The question is whether the expert's testimony "... is based on his application of scientific principals or theories (which we should submit to a Daubert analysis) or on his utilization of personal experience and skill with failed tires which we wouldallow a jury to evaluate." This case is interesting for several reasons, not least of which is some heroic hair-splitting on the scientific/non-scientific issues. It is germane to the business of evaluating oil properties and the ultimate resolution by the Supreme Court should be instructive. [131 F. 3d 1433: 1997 U.S. App. LEXIS 35981]

There is a suggestion in Carmichael, modest to be sure and caveats aside, that so long as I couch my opinions in nonscientific terms and relate everything to my experience and empirical knowledge, then Daubert does not apply and I can present a plausible but not necessarily provable argument which, by the way, is devilishly difficult to attack. The court used a comparison of a beekeeper and an aeronautical engineer as experts in different facets of the flight of a bumblebee that is too involved for our use but interesting nonetheless. The opinion seems to create two classes of expert, with those who are well grounded in provable knowledge being held to a higher standard than who rely on anecdote.

The above cases strongly suggest that the Daubert rules apply to appraisal experts, particularly as to the methods of appraisal used and the application of those methods to the issue at hand. What do these cases say about those circumstances where Daubert is not governing law? Strange that you should ask. About half the states, including Texas, follow Daubert - the other half - of which California is one - rely on *Frye* or a local version thereof *Frye* is the general acceptance criteria which preceded the Daubert decision.

In *Texaco Producing Inc., etal v. County of Kern*, a California Appeals Court decision involving ad valorem tax appraisal of an oil property, the court found that novel "tools", used within accepted methods of appraisal, were not "scientific" evidence and that the state's Kelly/Frye criteria for expert testimony do not apply. The court did not, however, contradict the trial court which, relying on precedent (*P.G.&E. v. Zuckerman* (1987)189 C.A.3d 1113-1135), stated that Kelly/Frye did apply to appraisal witness testimony. Like Carmichael, this case is directly related to the

question of how much weight should be given to the testimony of experts who base their opinion on purported skill and experience rather than on provable methods of evaluation.

There is a subtle but significant question raised by these cases. Is appraisal testimony and, by extension, competently done appraisal work, of sufficient weight to be accorded consideration under either the Daubert or the Frye general acceptance criteria? Or is the model to be the tire-expert in Carmichael who claimed no basis except for hanging around damaged tires for twenty years? Maybe the Beekeeper story is useful after all. In Carmichael, the court said, "The distinction between scientific and non-scientific expert testimony is a critical one. By way of illustration, if one wanted to explain to a jury how a bumblebee is able to fly, an aeronautical engineer might be a helpful witness. Since flight principles have some universality, the expert should apply general principles to the case of the bumblebee. Conceivable, even if he had never seen a bumblebee, he would still be qualified to testify, as long as he was familiar with its component parts. On the other hand, if one wanted to prove that bumblebees always take off into the wind, a beekeeper with no scientific training at all would be an acceptable witness if a proper foundation were laid for his conclusions. The foundation would not relate to his formal training, but to his firsthand observations." Further, "In other words, is the testimony at issue in this case more like that of a beekeeper applying his experience with bees or that of an aeronautical engineer applying his more generalized knowledge of the scientific principles of flight?"

In this allegory the Carmichael court is careful to have the beekeeper and the engineer testify about different issues. But what about the evaluation case where the beekeeper testifies for one side and the aeronautical engineer for the other side about the same issue? Suppose that each side in a lawsuit retain experts and that, as part of their testimony, they must described a waterflood process using the Carmichael standards.

Expert #1 - "Water is injected into a pre-designed pattern of wells and displaces the residual oil by interaction of the relative viscosity of water and oil. Displacement can be calculated, as I have done here, by using a Buckley-Leverett model."

Expert #2 - "Well, you put water in that well and oil comes out that other well; and the more water you put in the more oil comes out." Which one is the expert? According to Carmichael, both are experts but #1 is subject to Daubert while #2 is not. Go figure.

Daubert as quoted in *Joy*, refers to testimony "...only when scientific, technical, and other specialized knowledge will assist the trier of fact..." Daubert is an expansion of FRE 702 which is the source of the language referring to "...scientific, technical, and other specialized knowledge." Notice the rule is not restricted to scientific knowledge only; there is an intent to include "...technical, and other specialized knowledge, " Where does oil and gas property appraisal fall in that spectrum: scientific, technical, or other specialized knowledge? Is it possible that the general acceptance (*Frye*) standard should be interpreted to include technical and other specialized knowledge? We will visit that and other issues next time.

Three Methods of Value

Oil and gas appraisal borrows many concepts and procedures from real estate which is where most appraisal techniques were developed. The reference texts and journals are about real estate - land, homes, buildings. Oil and gas evaluation developed separately - from the ground up so to speak - and can stand alone without reference to real estate practice. It is only when we move from evaluation to formal appraisal that we have to consult the real estate world. For those of us in oil property appraisal, the concepts common to real estate are an exotic terrene stuck on the continental plate of oil and gas evaluation. Occasionally, it may be useful to refer to real estate methods or at least understand how they might relate to oil and gas. Just in case.

According to the 10th Edition of the Appraisal of Real Estate ("ARE"): "Appraisers estimate property value with specific appraisal procedures which reflect three distinct methods of data analysis - cost, sales comparison, and income capitalization. One or more of these approaches are used in all estimations of value; the approaches employed depend on the type of property, the use of the appraisal, and the quality and quantity of the data available for analysis."

Substitute "evaluator" for "appraiser" and the above applies to all who try to estimate the value of oil and gas properties. Many appraisers and most people working in industry use the Income Approach virtually to the exclusion of the other two methods. There are good reasons for that situation and I do not anticipate anything said herein will change that. However, as professional appraisers, we should at least consider all three methods. For appraisers certified by peer groups such as ASA and AI, it is required. It is also required by USPAP. In one of our early newsletters we discussed the Income Approach and we will come back to that and the Cost Approach in the next issue. This outline will cover the Sales Comparison Approach.

Appraisers consider all three methods for two reasons. First, the type of property and data available may not be amenable to evaluation using just one method. As an example, consider a 10-year old apartment building:

- An estimate of value could be based on the cost of reproducing or replacing the structure.
- An estimate could be based on obtaining data from recent sales of similar apartment buildings, making adjustments, and applying that value to the subject property.
- An estimate of value could be based on the expected income to be earned from continued operation of the property.

Second, using more than one method may account for characteristics and value considerations which might be missed using only one method.

Assuming that values have been determined by each of the three methods, the evaluator must then reconcile the values to obtain..... a single value indication or a range of most probable values..." Further, "The relative dependability and applicability of each approach are considered in reconciling the value indications into a final estimate of defined value".

Test Question: Assume that I have a fee simple oil producing property, termed the "subject," and that all of the necessary treating, separation, and shipping facilities are in place on the property. How do I value this property using the three methods?

The Sales Comparison Approach

Or Market Sales Approach as it is variously known, is the process in which a value estimate is derived by analyzing the market for similar properties that have recently sold and comparing these properties to the subject property. This approach is commonly used in real estate appraisal for homes, land, farms, and commercial/industrial buildings. It is simple in concept and is usually thought to give a good estimate of value for the types of property that are appropriate to value by this method. The process has several steps. The appraiser researches the market for sales of properties with characteristics similarities to the property being appraised. After verifying the data regarding both the property and the sale, he defines the similarities and differences between the comparable and subject property, and then makes adjustments to the value of the comparables to match the attributes of the subject property.

For the appraiser, most of the work in (his method comes in the adjustments that have to be made to each of the comparables. These are termed 'Elements of Comparison.' ARE lists nine such elements. These are: real property rights conveyed, financing terms, conditions of sale, market conditions, location, physical characteristics, economic characteristics, use, and non-realty components of value. Each of these elements may be broken down into sub-parts-, i.e. physical characteristics might include building size, lot size, quality of construction. architectural style, building materials, age, condition, functional ability, attractiveness, amenities, and onsite environmental conditions. Location might range from part of town or school district to whether the house is on a corner or in a cul-de-sac.

Assuming the appraiser has enough data, the adjustment process can start. This is essentially a process of determining which of the various characteristics of the comparable properties influence the value of each of those properties and by how much. It is hard work. All other things being equal, if one house has a pool and one does not how much does the pool add to or detract from value? Since all other things are not equal, how much of (lie difference in value is due to the other elements of comparison. If you only have a few comparables ("comps") you have to use paired-sales analysis where you compare one comp to another and try to sort out the differences. If you have a large database, statistical analysis, such as single or multiple regression, can be very useful in defining differences. Along the way you must determine the relative reliability of the data and of the adjustments.

After sorting out the differences in value contributed by each of the property characteristics, the appraiser adjusts the value of each of the comparables using those elements that bring the comparable closest to the subject property. A common Unit of Comparison, such as \$/sq. ft. or \$/acre, is than applied to the subject property to obtain a value estimate.

This method apparently works well for the types of properties to which it is normally applied. In residential real estate all the necessary data is relatively easy to obtain from public records and from realtors listings and databases. Banks and other sources provide financing and

market information. If necessary the appraiser can go to each property and accumulate data directly - measure the house, the rooms; check the heating, the roof, the plumbing, etc. He can talk to the buyer and the seller, real estate agents, finance company and escrow agents. I could do this in our condo development just by calling the realtor who has sold most of the units over the last 15 years.

Comparable Sales for Oil Properties

So! Why is Comparable Sales not used to value oil properties? There has been only one serious effort to apply sales comparison to oil properties but it never really caught on. We will review those later. There have also been some efforts that were hokey mutations designed to support predetermined values but that is another story - they never got off the ground either.

It would be simple to cite several reasons why the comparable sales method is not used to value oil properties. They are definitive and would not surprise anyone. But let us be positive and examine the process of valuing oil properties using a correct Sales Comparison approach.

First, assume that the subject property is a single oil producing property with all the necessary components of production. Next, locate as many recent sales of properties with characteristics similar to the subject as you can. Recent sales are important, otherwise you have to make more complex adjustments for market and financial conditions. The more similar the properties, the fewer and smaller the adjustments. Already we are in trouble because oil properties do not sell very often - certainty, not in the numbers and with the frequency of houses, condos, or land. The number of comparables is limited, particularly when considered in a "recent" time frame. This condition has been recognized by the courts and by responsible appraisal bodies. (*See Roberts v. Gulf (1983) 147 Cal. App. 3d*)

But assume that we find a few sales that are timely - what do we know about the properties? How can we determine the sales price? There are no realtors, no multiple listings, no public reporting. Even public companies only have to report transactions that are material. Property tax records are confidential, and working backwards from deed stamps is approximate at best. From the newspaper or the O&GJ? Even published prices for major transactions are rarely sufficiently detailed to know that was really paid, what other non-cash consideration was involved or how the deal was financed.

For the sake of argument, assume that reliable purchase prices can be obtained for several sales and that some information about the properties is known. Now we have to adjust the comparable properties to the subject property. First, what are the similarities and differences. A list here could be endless. Think of all the physical differences that could occur between two oil properties. I'll give you 10 minutes. Now, think of all the operational differences that could occur. Five more minutes. List all the economic differences. Ten minutes. Lastly, list all the circumstances of the sale that could influence that could influence the value. I came up with a couple of dozen physical differences starting with location, field, reservoir, oil gravity, depth number of wells, etc. Those are easy, if all four lists are laid out side-by-side many of the items are found to be related and some are duplicates - oil gravity influences price, etc. Fine tune the lists and you have a matrix of physical and other factors that could influence the value of a property.

Now, determine how much confidence you have in the data. Where did you get it, and where did your source get it? Next, determine how much influence each factor in the matrix on the sales price of the comparable property. How much of the sales price is due to Comp #1 having a sandstone reservoir while Comp #2 produces from limestone? How much difference is due to Comp #3 having a bottom-water drive while Comp #1 is a steamflood? How much difference is due to Comp 1 having 13° API oil while Comp #3 is 21° API?

You cannot generalize about this analysis or fudge with vague terms like "quality". Real Comparable Sales analysis requires specific adjustments for real differences. Waving your hands and saying #2 is better than #3 by some imaginative criteria is not enough. This is where that regression analysis comes into play. There must be definable and supportable differences in value which can be related to recognizable characteristics of the properties.

For the sake of discussion, assume that you complete a rigorous sales analysis and have adjusted your complete to rigorous the subject property - now what! You may want to define a Unit of Comparison. The old \$/Bbl or \$/BOE is often mentioned here, but a little thought would reveal a few problems. The \$/Bbl (or Bucks per Bibble as we say here) unit worked well enough 30-40 years ago when oil prices were relatively stable. most reserves were proved and predictable, and income valuations were difficult. Using \$/Bbl would require a definition of how many Bucks and what kind of Bibbles. Only Proved or maybe only PDP" Just Bibbles or BOE? Do you really know that much about the reserves of each comparable? Are reserves really the object? Isn't income the objective? So would not a unit of comparison related to future income be more useful? But then you would have to know the anticipated future income, and here again required data is missing.

Assuming that a useful unit of comparison could be derived, the subject property could be valued by applying the appropriate unit. If the unit is \$/acre and the subject has 640 acres then the value is 640 x \$/acre.

It should be apparent that Comparable Sales cannot be applied to oil properties.

- There are not enough sales
- There is not enough available data
- There is no accepted unit of comparison
- Oil properties are acquired for the income they produce not for the amenities of the property

In fact, the only way to do a Comparable Sales analysis for oil properties is to fake it; to start with an Income Approach appraisal for each comparable and for the subject. Of course, if you have all that, what's the point of a Comparable Sale analysis? The whole idea of the three approaches to value is to arrive at three separate and independent values which can then be reconciled to a final value. If the Comparable Sales value is simply an extract of the Income Approach value, it is not separate or independent and therefore is not really of much use.

Serious Attempts

As noted above, there have been attempts to adapt Comparable Sales to oil properties. The best of these was by Bill Strevig in the late 1980's (SPE#18907). This was a form of Comparable Sales method which started from a \$/BOE for each comp and/or for a group of sales and made adjustments to the \$/BOE before applying it to the subject property. There were at least 19 specific criteria for which adjustments should be made and a direction to make as many others as necessary. This approach never really caught on because, aside from investment bankers and a few consultants, very few people had the data resources to make it work and those resources were almost entirely Income Approach evaluations. Without the knowledge provided by the income evaluations, there is no starting point and no source for making adjustments. For all its difficulty, the Strevig method was at least a reasonable representation of a Market Sales approach. It could be done BUT it had to be right.

Not-So-Serious Attempts

The same cannot be said of other attempts to invoke the Comparable Sales method. For the most part, these mutations start from an Income Approach evaluation; derive a convenient ratio (usually \$/Bbl or \$/BOE); fail to identify physical, operational, or economic differences between the comparable and subject, and ignore the necessity to make specific adjustments between each comparable for identified differences. These methods rely instead on overall adjustments based on differences between the income projections for each of the properties.

The Rocky Report

Editor's Note: For our new readers, Rocky Stone is our field correspondent who reports to us on occasion regarding conditions in the Oil Patch.

Hey there, Good Buddy! What's doin'!? Sorry I haven't written in a while but we have been real busy going broke up here in the Big Valley. Been getting your letters though and the boys and I really enjoy them. I was meaning to talk to you about the last one where you were picking on regulation and that global warming and all. Is there anyone you didn't insult? Had a bad day, huh? On the other hand the Sierra Club probably won't be after you for bucks anymore. Come to think of it, if you had managed to stomp on AARP and MCI you could have cut your junk mail in half. We did get into a debate here at the Stone Works, in regard to the issue of who got here first. J.T. said he thought it was the Irish. St. Brendan or some such or maybe the Welch, but Bubba was sure it was the Egyptians because of all the pyramids in Mexico and San Francisco and other places, but you know nobody- listens to Bubba anyway. Well, before you know it, everybody in the office was putting in claims for every group from Armenians to Zimbabweans when Jim reminded us that Native Americans were here first, which no one could argue with. and allowed as how lie and his relatives had thought about demanding the land back. A discussion of the mechanics of this process was going strong until Bubba pointed out to Jim that such a transfer would likely trigger a Change in Ownership property tax assessment with a new Prop 13 tax base and, the way things work around here, an escape assessment back to when Father Serra arrived. Jim stomped off muttering something about "... white man."

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Well, I can't say much good about things up here. We had so much rain early on that the lease roads washed out, power poles fell over, and cellars filled up so that the only guys making money were vac truckers. Couldn't do much work so I spent a lot of time looking out the window watchin' oil prices drop. Postings are starting to creep back up now but, heck, even a dead cat will bounce. Just for something to do, we changed our name from Stone Oil Company to Stone Oil LLC. Our hot-shot lawyer says this has tax and liability advantages but as near as I can tell LLC means Losin' Lotsa' Cash and tax advantages don't mean diddly. What with the oil price and all the consolidation going on among the big guys, our lawyer (same one) thinks we stand a good chance of being declared an endangered species (*oilus Americanus smalliphia*) and is going to file with EPA next week. Ha! Ha! Just what we need.

Things aren't all bad though. You remember we have been trying to develop that property down near Taft - we named it Moose Mounds - but what with the oil market we couldn't justify drilling. Well, wouldn't you know old cousin Verne, we call him "Outcrop" on account of his hair does this funny thing in the back; Anyway, Verne got a new computer, one of those Clintonesque gadgets that comes with a joystick and big speakers but no memory, and after we got it to work - it was the darndest thing, when you pushed the ON/OFF switch to ON a screen came up and said "What do you mean by ON?," same thing when you pushed OFF, then after it was "ON", whatever that means, every time Verne typed a letter or clicked the mouse, another message came up that said. "You have performed a Legally Accurate function - Select Try Again or Move On".

Anyway, we finally got it to work, and Verne got on the Internet and found this government program where they pay you to not do anything. This had possibilities so Verne (considering he went to UC Somewhere-or-Other he is reasonably smart) convinced some DOE guy to put Moose Mounds on the program by saving that if they (the Feds) paid us a dollar over the current posted price we would stop producing oil, thereby reducing the glut, propping up prices for everyone else, saving jobs, protecting the environment (the clincher), and generally making more time for Mom, apple pie and the American Way.

So far this looks good, but we may have trouble on the property tax side. Since there would be no production, there would be no income, so there is, ipso facto, no value but the local fella is talking about the wellbore having value. This could get tricky. The well bore is just a hole in the ground - sort of like negative air space - Now can't do much with it. Now, we could fill it in with concrete or dirt and make it into a parking lot or farm but it would be kind of small (12" casing = 113 sq. in.) but (lien again there are 21 wells so we could have 21 little farms - course nothin' grows out here.

Well, gotta go! I smell crude oil on the breeze which probably means that old shipping tank sprung another leak. Bah!

ROCKY

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Book Reviews

“Annals of the Former World”, McPhee, John; Farrar, Straus and Giroux, New York, 1998. McPhee has been around. A prolific and very good writer. I read his original "Basin and Range" almost 20 years ago. "Annals" is an anthology of his previous works with (lie addition of a new section. McPhee writes about a lot of things but his treatment of geology and geologists is second to none. He makes geology readable. conversational - this is a not text, it is more like a travelogue with interesting companions. Visit new places New Jersey, Jackson Hole, Cyprus, and the Great Salt Lake. A passage from "Basin and Range:"

Near the far side of Utah, the flats turned blinding white, corn-snow white, and revolving winds were making devils out of salt. Over the whiteness you could see the salt go off the curve of the earth. When the drivers of jet cars move at Mach .9 over the Bonneville Salt Flats, they feel that they are always about to crest a hill. Dig into the salt and it turns out to be a crusty white veneer, like cake icing. more than an inch thick - an almost pure sodium chloride. Below it are a few inches of sand-size salt particles, and below them a sort of creamy yogurt mud that is the color of blond coffee. In much the manner in which these salts were left behind by the shrinking outline of the saline lake. there were times around the edges of North America when the shrinking ocean stranded bays that gradually dried up and left plains of silt. When the ocean came back, came up again, it spread inland over the salt, which was not so much dissolved as buried, under layers of sediment washing in from the continent. With the weight of more and more sediment, the layers of silt went deep. Salt has a low specific gravity and is very plastic. Pile eight thousand feet of sediment on it and it starts to move. Slowly, globularly, it collects itself and moves. It shoves apart layers of rock. It mounds upon itself and, breaking its way upward, rises in mushroom shape - a salt dome. Still rising into more shares and sandstones it bends them into graceful arches and then bursts through them like a bullet shooting upward through a splintering floor. A plastic body moving like this is known as a diapir. The shape becomes a reverse teardrop. Generally, after the breakthrough, there will be some big layers of sandstone leaning on the salt dome like boards leaning up against a wall. The sandstone is permeable and probably has a layer of shale above it, which is not permeable. Any fluid in the sandstone will not only be trapped under the shale but will also be trapped by the impermeable salt. Enter the strange companionship of oil and salt. Oil also moves after it forms. You never find it where God put it. It moves great distances through permeable rock. Unless something traps it. it will move on upward until it reaches daylight and turns into tar. You don't run

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a limousine on tar, let alone a military-industrial complex. If, however, the oil moves upward through inclined sandstone and then hits a wall of salt, it stops, and stays-trapped. Run a little drill down the side of a salt dome and when you hit "sand" it may be full of oil. In the Gulf of Mexico were many of the bays that dried up covered with salt. Where the domes are now, there are towers in the Gulf A number of salt domes are embedded in the Mississippi Delta, and have been mined. There are rooms inside them with ceilings a hundred feet high-room after room after room, like convention halls, with walls, floors, and ceilings of -salt above ninety-nine per cent pure.

"Cost of Capital: Estimation and Applications", Shannon P. Pratt, John Wiley & Sons, Inc. New York, 1998. This is the last cost-of-capital book you will ever need. And, if you do not have any other cost-of-capital books, think of all the money you will save by purchasing this one. Shannon Pratt is a pre-eminent authority in business valuations whose 1997 edition of "Valuing a Business" contained a comprehensive discussion of tile use of cost-of-capital in business valuation along with an extended discussion of the CAPM and the application of CAPM to real estate appraisal. Pratt examines all the various aspects of cost-of-capital, the calculation of COC, where to obtain data for the calculation, the pros and cons of certain applications. and specific applications to areas such as ad valorem taxation (Chapter 20). The depth of supporting references and sources is superb. Chapter titles include: Net Cash Flow: The Preferred Measure of Return. Relationship Between Risk and the Cost-of-Capital. The Capital Asset Pricing Model (CAPM), Proper Use of Betas. and Cost-of-Capital in the Courts. Put this on your Christmas list. I am using it as a stocking stuffer.

Whilst working on the cabin I chanced to visit with our Chipmunk friends who brought me up to date on the piñon nut harvest and all the dumb deer hunters they had seen. In turn, I filled them in on the sad state of things like oil prices. They wish everyone a Merry Christmas and sent along this little ditty:

*Christmas, Christmas Time is Near,
Time for Toys and Time for Cheer,
We've been Good but we can't Last,
Hurry Christmas, Hurry Fast*

*We want Oil at 15 Bucks,
Gettin' Five Dollars Really Sucks,
We're Cutting Costs but We can't Last,
Hurry Increase, Hurry Fast*

With profound apologies to Alvin, Simon, and Theodore, David Seville, and Ross Bagdasarian, writer of "The Chipmunk Song", 1958, Liberty Records. Now on CD by Sony.