

# APPRAISING OIL & GAS PROPERTIES

A Newsletter for Appraisal Professionals

*Richard J. Miller & Associates, Inc.*

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## RJMANDA.COM

Well, we finally did it. We broke down and spent the time and bucks to get our Website on the air, so to speak. After allowing this project to lounge near the middle of our oft-revised and just as oft-ignored "TO DO" List, we decided to quit dawdling. Actually, the fellow I had been talking to off-and-on for almost two years about constructing the site got tired of waiting and started on his own. I received an e-mail that said, "What do you think of this?" and an attached site outline. Having no remaining excuses, we got busy. We toyed with calling it Opinions R'Us.com but on advice of counsel and others decided instead for something less descriptive.

We kept our site fairly simple. There is the obligatory "Home Page" which explains what we do and how we do it, along with a tidy list of benefactors. The list used to be longer but what with mergers and consolidations many now fit on one line. We have included a section with some of the Reports and Studies that we have done over the past few years, including summaries of the most recent WSPA studies. All are in PDF format suitable for downloading. Another section lists the SPE and other Professional Papers that we have published. A separate page was reserved for information about our evaluation software, *EUREKA for Windows*. There are plans for expanding that section to allow downloading of examples and updates. There is also, of course, a "Contact Us" section for those who care to pass along comments, helpful and otherwise, or to ask questions about our firm's services, how to get on our client list, or about EUREKA user-issues. The latter comes with the standard 2-day waiting period during which we hope you figure it out for yourself.

The section that we know everyone is waiting for is (drum-roll, please) the Newsletter Section. We dug all the old newsletters out of dusty drawers and from behind file cabinets. We also had to resurrect a few from 3.5" storage disks. It was a lot of work; I am glad I did not have to do it. Converting ancient WordPerfect files to PDF was a real chore. A few oldies had to be scanned, which, as everyone knows, always results in perfect reproductions. Anyway, it was worth it. Every newsletter from 1993 through this issue is on the Website. Yes folks, now you can return to those wonderful days of yesteryear and revisit old friends (the chipmunks, the squirrels, the three guys discussing market value over nachos) - relive spirited debates about Reserves Definitions (you Say Proved, I Say Probable), the Cost of Capital, Oil Pricing and other interesting stuff. Enjoy the nostalgia of rereading old court cases, football scores, book reviews and the occasional opinion piece about government and other sources of irritation. Pay us a visit, set a spell, and enjoy yourself.

**Christmas Comes Early in Southern California** Yes, indeed, Christmas in November, the happ-happiest season of all, Joy to the World and Ho, Ho, Ho! Better than the icing in an Oreo cookie. Better than a brand new shiny red wagon? What, pray tell, am I going on about? What glad tidings could bring such cheerful smiles and sparkling eyes to boys and girls, young and old in classrooms and Boardrooms all over our fair corner of the world? What did Santa bring to all the alumni- and their children and grandchildren?

USC 52 UCLA 21  
USC 44 Notre Dame 13

Ha! The local gloat meter has gone off the scale. Ah, it reminds a body of the auld days - Student Body Right, John McKay (RIP), and New Years Day in the Rose Bowl. And, last but far from least, our boy Carson Palmer has brought that Heisman Trophy back here where it belongs. On to the Orange Bowl against some guys from Iowa.

**Good Things** November was good for other things too. I suspect that the closest most Democrats will get to the White House for a long time will be Wednesday nights on NBC. Has Streisand left the county yet? I would be pleased to drive.

December is Plumbing Awareness Month - Do you know what your pipes are doing?

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**New Neighbors** - We have some new neighbors at the cabin. During the summer Maurice and Clarice established a residence on the hill across the meadow and, until a few weeks ago, had taken to morning and evening strolls about the area. They may have brought the kids but we have not spotted them; it may be off-season. M&C are a pair of coyotes about the size of large German Shepards, and from the look of them, quite healthy. Ever since our human neighbors and their dog moved out a year ago there has been a upsurge in the local critter population. We had not noticed ground squirrels before but now they are everywhere. I tried teaching one pair to dig postholes but there was some complaint about "union rules." During the recent hunting season I got up one morning and found the front yard full of mule deer - apparently they can tell private from public property. More on "hunting" in the next issue.

Sadly, we are probably going to have other neighbors soon. For years now the remaining home sites around us have been vacant (we are at the very edge of the club properties) and we had come to look on the meadow and woods as "ours." We even bought one of the lots (aka Miller's Outpost) to maintain elbow room. But it appears that a fellow has bought the other two parcels and plans to build, probably next summer. If his plans work out, we will not see his house, but his access road will chop up the meadow. There goes the neighborhood.

**Other Good News** - The Forest Service finally made good on its threat to come through and cut a fire break along the boundary between the private property and the national forest. This is good in a way since a lot of dead and overgrown stuff needed to go and it would be years before I worked my way all the way around. It took some getting used to but, on the other hand, we gathered up enough scrub oak firewood to last 10 years. The bad news is that, aside from disrupting a lot of critter habitat (ours included), the Feds are planning to burn the debris piles in place. We are a bit trepidatious about this. The Forest Service record on controlled burning is not great. Los Alamos comes to mind. I plan to be standing by with my trusty Kodak and garden hose just in case.

That's about it on local news. I had planned two main topics for this newsletter - (1) Discussion of trends in the value and valuation of oil properties and (2) A review of the treatment of Proved and Unproved reserves as a source of income in market value appraisals. These issues are more than enough to fill our usual eight pages and would be bound to stir up some kind of controversy without any outside help. But no sooner do I get the outline drafted than along comes a court decision that puts a whole new emphasis to the Proved/Unproved issue. So, we will put the "Trends" discussion off till next time and concentrate on the Proved/Unproved debate.

There are a few other things to ruminate upon. We were somewhat surprised, after the last newsletter, to receive a couple of responses asking, "Who is John Galt?" I had assumed that anyone who went to college in the early 60's knew the answer to that question. See below - Book Review. We also look at Paul Newendorp's new book and present some information from a recent ASA Business Valuation Conference. So, get yourself another cup of coffee and let's chat.

## Proved Reserves and Unproved Reserves

Topical discussions in our newsletter tend to be somewhat abstract and theoretical with the occasionally musty air of textbook stuff. We try to throw in the odd example to liven things up but even those are usually hypothetical. We have not previously had the opportunity to explore a real-time problem; a case study, if you will. This time, thanks to the California Fifth District Court of Appeal, we do. This will give us a chance to see how our (yours and mine) theoretical ideas hold up in the real world - particularly that real world outside our cozy little evaluation industry. There will be a quiz at the end.

### **The Industry Definition of Reserves**

Back in 1997 or 1998 when the Society of Petroleum Engineers/World Petroleum Congress (SPE/WPC) Reserves definitions came out, we did a newsletter piece on the definitions; What do the definitions mean? What does the terminology mean? etc. We have also had occasion to review reserves definitions as part of drafting a couple of SPEE monographs, including the one currently in process. Finally, this firm has done a rather ostentatious review, both for client work and publication, which compared several definitions of reserves to determine what, if any, differences exist. (See RJMANDA.com- Reports and Studies)

In every case that was reviewed, the focus of all reserve definitions is Proved reserves. Those are the reserves that hold everyone's interest. The industry standard, to the extent there is one, is the 1997 SPE/WPC definition which states:

*"Proved reserves are those quantities of petroleum which, by analysis of geological and engineering data, can be estimated with reasonable certainty to be commercially recoverable, from a given date forward, from known reservoirs and under current economic conditions, operating methods, and government regulations. Proved reserves can be categorized as develop or undeveloped."*

The formal SPE/WPC definition document, as presented on the SPE Website and in SPE publications includes several

pages of discussion of the intent and application of the reserves definitions. As noted in earlier discussions, there are several operative phrases in this definition including “analysis of geological and engineering data,” “reasonable certainty,” “economic conditions,” and “operating methods.” The controlling factor is that the quantities of petroleum classed as Proved must have reasonable certainty of commercial recovery based on analysis of geological and engineering data. If that condition cannot be met, the economic conditions, operating methods, and the rest are interesting but serve no purpose. SPE/WPC make this clear by referring to reasonable certainty as “a high degree of confidence” if deterministic methods of evaluation are used and “...at least a 90% probability...” if probabilistic. The result obtained from using either method must be the same so it is fair to equate high degree of confidence with 90% probability.

SPE/WPC also says that “... reserves are considered proved if the commercial producibility of the reservoir is supported by actual production or formation tests. In this context, the term proved refers to the actual quantities of petroleum reserves and not just the productivity of the well reservoir.” The discussion of the definition goes on for several paragraphs regarding what is considered to be Proved.

In the 1997 definitions, SPE/WPC for the first time, went to some effort to discuss and define Unproved reserves which are “... classified as probable and possible reserves.” SPE/WPC did so in order to “...facilitate consistency among professionals using such terms.”

According to SPE/WPC: “Unproved reserves are based on geologic and/or engineering data similar to that used in estimates of proved reserves; **BUT** technical, contractual, economic or regulatory uncertainties preclude such reserves being classified as proved.” (Emphasis added) In other words, if the reserves do not meet the conditions to be Proved then they are Unproved. That is, if there is not a high degree of certainty or a 90% probability of commercial recovery as supported by actual production or formation tests, the reserves are Unproved regardless of the economic conditions, operating methods or government regulations that may be considered to apply. **SPEE Monograph One** <sup>(1)</sup> discusses the definitions in greater detail. I all of the research of oil and gas reserves definitions done by this firm, none were found to vary from that essential criterion.

The clear intent of the SPE/WPC definitions is that Unproved reserves lack the necessary geologic and engineering data that would satisfy the “reasonable certainty” requirement; however, as geologic and engineering data is accumulated and processed, Unproved reserves may attain greater certainty of being economically recoverable and may become Proved. If accumulating data does not increase certainty or act to reduce uncertainty, the Unproved reserves may be reduced in class from

Probable to Possible or be dropped altogether. It would not matter if prices doubled or a new magic recovery method was devised - the reserves would still be uncertain and, therefore, Unproved. This seems obvious, but often the most obvious points are the ones that are most easily overlooked.

### **Risk Adjustment Factors**

SPE/WPC makes the point in several places that, “*Estimation of reserves is done under conditions of uncertainty*” and also notes that, “*Because of potential differences in uncertainty, caution should be exercised when aggregating reserves of different classifications.*” This caution is appropriate since the conditions which cause a volume of reserves to be classed as Probable or Possible can vary significantly from property to property but the definitional term is the same. It might be helpful to distinguish the volumes by mathematical certainty, say Probable (42%) or some such, but that may just add more confusion. The problem is that in the evaluation of a property for acquisition, capital budgeting or other purpose there may be Proved and Unproved reserves to consider. Some evaluators have attempted to cope with this problem by the use of risk-adjustment factors (RAF’s).

SPE/WPC makes no mention of risk-adjustment factors. SPEE does touch on the subject in **Monograph 1** as does Cronquist. There is very little discussion of RAF’s per se in industry literature but there is considerable discussion of risk and uncertainty. There is no question that such factors do exist and that they appear to be used in the economic evaluation of oil properties. The annual SPEE Survey of Parameters<sup>(2)</sup> has collected data on what SPEE has termed Reserve Adjustment Factors (also RAF) for years. In the June, 2002 survey for example, respondents reportedly would reduce PDP reserves by an average of 3.47%; PUD reserves by 41.64%, Probable by 76.2% and Possible by 93.48%. These RAF’s are highly subjective as shown by the wide spread reported in the SPEE Survey. While the mean RAF for Probable Undeveloped is 23.80% the Standard Deviation is  $\pm 19.49$  percentage points - a range from 4.31% to 43.29%. RAF’s have grown up as a means of attempting to quantify the degree of risk associated with either a reserve estimate or the “...present value of future net revenue attributed to reserves of various classifications, development statuses, and producing categories.”<sup>(3)</sup> According to SPEE, about 44% of evaluators apply RAF’s to reserve volumes while 56% apply RAF’s to discounted cash flow. The choice in the point of application, whether to reserve volume or to discounted cashflow, can produce a significant difference in the resulting value.

The purpose of many of these RAF’s is to allow cash flows from the anticipated production from differing reserves classifications to be accumulated and reduced to present value at a standard discount rate. The primary function of the

consolidated cash flows and present values is in capital budgeting. While RAF's may serve a financial purpose when carefully used, the classification of the reserves being valued does not change; the application of an RAF of 76.2% to a Probable reserve volume does not increase the amount of geologic and engineering data available for analysis, nor does the RAF remove the need for a determination that the reserves will be "commercially recoverable" with "reasonable certainty." The degree of certainty was established when the reserve volume was classed as Probable or Possible.

The RAF is an evaluation convenience, some might even say contrivance, but the primary consideration is the classification of the reserve based on the definitional criteria. One thing is very clear. No evaluation engineer who uses RAF's would consider that applying an RAF to an Unproved reserve would convert that reserve into Proved. The reserves remain Unproved. Just to be sure, I conducted a little poll on the SPE Reserves and Evaluation Technical Interest Group site. I received a lot of cheerful and informative responses, all (100%) of which are in agreement that the application of an RAF does not change the Unproved class of reserves to Proved.

#### ***Another Definition of Proved Reserves***

Now let us look at another definition of Proved reserves. In California, as in Texas, oil and gas properties are assessed annually for property tax based on the market value of the property. The California State Board of Equalization (SBE) has written a number of rules to govern how properties are to be valued; SBE Rule 468 (b) reads as follows:

*"The market value of an oil gas mineral property interest is determined by estimating the value of volumes of **proved reserves**. Proved reserves are those reserves which geological and engineering information indicate with reasonable certainty to be recoverable in the future, taking into account reasonably projected physical and economic operating conditions. Present and projected economic conditions shall be determined by reference to all economic factors considered by knowledgeable and informed persons engaged in the operation and buying and selling of such properties, e.g., capitalization rates, product prices and operation expenses." (Emphasis added)*

Rule 468 is not new - it was written in 1978, amended in 1979 and was last reviewed in 2001. It was written as a collaboration of SBE staff experts, industry evaluation people, and county assessors. Despite that effort, Rule 468 was extensively argued and litigated ending in a landmark appeals court decision in ***Lynch vs. State Board of Equalization***<sup>(4)</sup> in 1985. In *Lynch*, the California Court of Appeals affirmed the constitutionality of Rule 468 and underscored the conclusion that assessed value was to be based on Proved reserves. Period. Lest

this direction be misunderstood SBE publishes a manual for the use of county assessors and appraisers which elaborates upon the intention and application of Rule 468(b). The most recent is Assessors' Handbook Section 566, "Assessment of Petroleum Properties," (revised January, 1999).

An examination of the Rule 468(b) definition of Proved reserves reveals that the requirement for "reasonable certainty" based on "geological and engineering information" is the primary criteria and is identical to the industry/SPE definition. The words are re-arranged, probably for the better, but there can be no confusing the identity of intent. All the other conditions are subordinate. This should not be surprising since SBE has historically followed, if not adopted outright, the prevailing industry definition of Proved reserves. The original Assessors' Handbook (AH566), written in 1966 and revised in 1972, said the following under the heading; "A Definition of Reserves."

*"The word "reserves" has been applied to underground volumes of oil and gas with so many different connotations that it is necessary to define it for use in this manual. For this purpose the definition of the American Petroleum Institute for "Proved Reserves" is used:*

*'These are the volumes of crude oil and natural gas which geological and engineering information indicate, beyond reasonable doubt, to be recoverable in the future from oil and gas reservoirs under existing economic and operating conditions. They represent strictly technical judgement and are not knowingly influenced by policies of conservatism or optimism. They are limited only by the definition of the term "proved." They do not include what are commonly referred to as "probable" reserves.'*

The current version of AH566 discusses the similarities and differences between the industry/SPE definition of Proved reserves and the Rule 468 definition and concludes that Rule 468(b) "...allows inclusion of reserves derived from future expectations for product prices and operating costs." This conclusion assumes that the term "current" in the SPE definition means that prices and costs are held flat at some initial value. That assumption is not correct but it has not been extensively debated due to the presence of larger issues.

In the nearly 20 years since *Lynch*, property tax values in California have been based solely on Rule 468(b) Proved reserves with little or no distinction being made between the industry and 468 definitions. It has been recognized by assessors and industry appraisers alike that the purpose of Rule 468 was to define the method of estimating the market value of a volume of Proved reserves on a property not necessarily to determine the volume of reserves. Hence, the distinction between the two definitions noted by AH566 has always been interpreted to mean that the use of "...reasonable projected physical and economic

operating conditions...” referred to escalating prices and costs which could add value and extend the economic limit of a property thereby increasing value. In my 15 years of doing appraisals and testifying for property tax appeals, reserve volumes or classification of reserves has never been an issue.

### ***James W. Maples v. Kern County Assessment Appeals Board***

For those unfamiliar with our neck of the woods, James W. Maples is the Assessor of Kern County (KCA), and a USC graduate, who has found himself filing suit against the Kern County Assessment Appeals Board (KCAAB) after Occidental Petroleum won an appeal of the property tax assessment on the Elk Hills field.

A bit of background is necessary. In 1998, Occidental was the successful bidder for the U.S. Department of Energy (DOE) interest in the Elk Hills field which, as luck would have it, is in Kern County. KCA promptly enrolled the entire published purchase price of \$3.65 billion. Things were looking up in Bakersfield. ‘Not so fast,’ said Oxy, ‘California law (Rule 468(b)) only allows assessment based on the Proved reserves, which have a value of about half the purchase price. The rest is Unproved and is not taxable until it becomes Proved.’ Litigation ensued. After a 3-week hearing with lots of testimony and evidence from both sides, the KCAAB agreed with Oxy - tax only the Proved -and reduced the assessed value to \$1.921 billion. [Caveat Reader: Yours truly was one of two expert witness appraisers who testified for Occidental.] KCA filed suit in Superior Court in Bakersfield where the judge ruled again for Oxy by saying that the AAB was correct - tax only the Proved. Up to this point, one of the arguments that had been advanced by KCA, but not by any of the appraisal experts on either side, was that Unproved reserves could be taxed as Proved if the Unproved reserves were risk-adjusted.

Moving right along, KCA filed an appeal of the Superior Court decision to the California Fifth District Court of Appeal. Very lengthy and detailed briefs were presented by both sides with hardly a word (buried way down in a footnote in one of Oxy’s filings) about risk-adjusting reserves or including Unproved reserves as taxable under Rule 468 by anyone. KCA hung his hat on, ‘Oxy paid \$3.65 billion and that should be the taxable value!’ Anyway the oral arguments were presented October 16 and a bunch of us made the trek up to Fresno to listen. [By this time my status is reduced to “interested spectator.”] I started to think that something was amiss when the presiding judge, during questioning about reserves definitions in Rule 468, leaned down and said, “Do you mean that engineers decide what reserves are taxed?” or something to that effect.

On October 29, 2002 the court issued its decision which said, in effect, that Oxy, the AAB and the Court are right - only the Proved reserves can be taxed under Rule 468, BUT we (the

court) find that Proved reserves includes all the reserves not just those that are called Proved by the “industry” definition. The logic and rationale for this astonishing development are, to say the least, difficult to fathom but the court appears to rely upon three conclusions that are discussed as part of the opinion.

1. Rule 468 bases taxable value on Proved reserves “taking into account reasonably projected physical and economic operating conditions.” where “Present and projected economic conditions shall be determined by reference to all economic factors considered by knowledgeable and informed persons...” Rule 468 includes a list of the “economic factors” i.e. capitalization (discount) rates, product prices and operating expenses. These are components of an evaluation which are clearly economic in nature and which can be related to the present and to the future through projection.
2. Probable and Possible reserves are discounted in various ways to reflect that they are a riskier investment than Proved reserves but they are considered by “...knowledgeable and informed persons in valuing a petroleum property.” The court pointed to the Occidental evaluation, which included cashflows derived from risk-adjusted Unproved reserves as the example and referred to snippets of testimony from the KCAAB hearing to jump to the conclusion that knowledgeable and informed persons in the marketplace value properties using risk-adjustment factors or other devices. In so doing, the court made no reference to any other evidence that properties in California are actually bought and sold using risk-adjusted reserves or for that matter, that property transactions included value for, Unproved reserves. Nor did the court have any testimony that such transactions would occur.
3. “Knowledgeable and informed persons” assign risk-adjusted values to reserves which are classified by the industry definition as “Unproved.” Since, the court speculated, this is done in the marketplace those risk-adjusted values must be included in as Proved reserves under Rule 468(b). The court then slid the risk-adjusted factor application under the “present and projected economic conditions” umbrella and concluded that risk-adjusted Unproved reserves are Proved reserves for Rule 468(b) purposes.

The court also refers to the difference in reserve definitions noted in AH566 “...which allows inclusion of reserves derived from future expectations for product prices and operating costs...” as justification.

In order to get to this opinion the court has to throw out the 18-year old *Lynch* decision and ignore some of the finer points in AH566; not to mention the fact that nowhere in Rule 468 or any other SBE rule-making or instructions does the idea of taxing Unproved reserves, risk-adjusted or not, occur. The reason is obvious. As noted in *Lynch*, they are far too speculative to serve as a tax base.

The court relies on the concept of risk adjustment as an industry practice but fails to understand that the adjustment does not remove any of the uncertainty as to future recovery that caused the reserves to be classed as Unproved in the first place. Risk-adjusted Unproved reserves still are not “reasonably certain” of recovery as required of Proved reserves under Rule 468 and industry definitions.

### ***What Does This Mean for Oil Property Valuation***

Some readers will have already decided that this is just another legal spat, it only involves property tax, and after all, why take seriously anything that occurs in California. Similar things were said about Medicare and the income tax. But, bear with me for a bit whilst we look at this more closely.

From the standpoint of property taxation in California, unless this decision is reversed by the Supreme Court, assessors will feel free to attempt to estimate Unproved reserves and, in the absence of any acceptable standards for risk-adjustment factors, determine the market value of reserves which have not been developed, tested, put on production or even shown to physically, let alone commercially, exist. This is taxation of expectations as opposed to a demonstrated value. Not even the IRS taxes what you might earn from a new job next year, only what you earned this year.

There is of course a broader impact that goes far beyond the valuation of oil properties for property tax. While using the language of Rule 468 as a vehicle, the court, probably unintentionally (40% RAF), has also imposed a new technical standard on oil property valuation, stating that the application of risk - adjustment factors to Unproved reserves converts those reserves to Proved. With luck this opinion will be lost from view outside this case. But, it is my experience that once an issue gets sucked into the black hole of litigation, it is never the same again. This is a published decision that can be cited as authority in other cases. Any attorney worthy of his ABA decoder ring can take this court’s rationale and apply it in other valuation litigation. And, since it is a technical (scientific) issue, it will not be restricted to California or to property tax. The Daubert/Kumho Tire criteria were designed to keep junk science from coming into the courtroom but there is no safeguard against junk science emanating from the bench.

In fairness to the court, this is a complex issue but, on the other hand, this was not an issue that the court was asked to decide or had any need to get into in the first place. The court resolved the basic issue by confirming that only Proved reserves can be taxed but then went off on its own to create an entirely new definition of Proved reserves for Rule 468(b) purposes. It may be that the court decided to resolve a legal issue with an equity decision by requiring Oxy to pay tax on the entire purchase price. If so, then only Oxy should be effected. I doubt that many folks in the assessment community will see it that way.

As we go to press, the Court of Appeal has denied Oxy a re-hearing on the issue. The next stop is the California Supreme Court. Stay tuned.

### **References**

- (1) “Guidelines for Application of Petroleum Reserves Definitions - Monograph I - Second Edition,” The Society of Petroleum Evaluation Engineers, October, 1998, Houston, TX.
- (2) “Survey of Economic Parameters Used in Property Evaluation,” The Society of Petroleum Evaluation Engineers, June, 2002, Houston, TX.
- (3) “Estimation and Classification of Reserves of Crude Oil, Natural Gas, and Condensate,” Cronquist, Chapman, Society of Petroleum Engineers, Richardson, TX, 2001, pg. 231.
- (4) *Lynch vs. State Board of Equalization*, 164 Cal, App. 3d. 94 (1985).

### **The Stanford Project**

Readers of these pages (for those who may have missed a few, see RJMANDA.com- Newsletters) may have noted that we are no big fan of the various so-called “solutions” to the so-called “global warming” issue. It is not that I do not believe that the earth may be warming. There is ample geologic and human-recorded evidence that the earth periodically warms and cools for a variety of reasons all of which are naturally occurring and none of which are either caused by or correctable by Man. The Earth may be in a warming cycle, as it has been since the 17<sup>th</sup> or 18<sup>th</sup> century, and some of the works of Man may very well be causing an acceleration of the rate of increase in temperatures even though the degree of that influence is still highly debatable.

Until recently, however, the only consideration given to this “problem” was how to use “global warming” as a political issue against the oil industry, auto manufacturers, and productive economies in general. So it is of interest when a responsible group takes a serious look at practical and science based solutions to potential excess carbon dioxide production by industry and other inanimate sources. In the past year, several large oil companies have initiated the Stanford Project by

endowing Stanford University with a generous research grant to study various means of reducing and/or disposing of excess CO<sub>2</sub>.

This proposal couple with well-meaning pronouncements by BP, Shell and others have been used by Greenies to suggest that industry is moving ahead while the government is inactive. Aside from the fact that an inactive government is not necessarily a bad thing, they miss an important point. If BP wants to spend corporate funds exploring the science behind global-warming AND investigate rational solutions, more power to them. If the stockholders decide that management is off on a wild goose chase, a regime change can be instituted; it is their money after all. This is a lot different than imposing arbitrary limits on the U.S. economy or putting a hydrocarbon tax in place.

## Book Review

**“Decision Analysis for Petroleum Exploration”** 2<sup>nd</sup> Edition, Newdendorp Paul and Schuyler, John, Planning Press, 2000.

The 2<sup>nd</sup> Edition is an update of the 1975 original which gets a lot of use around here. The update is done largely by Schuyler with consulting help from Newdendorp but the content and utility of the book does not suffer in any way, shape, or form. Schuyler brings to the volume a background in the use of decision analysis in petroleum project evaluation. He is also the author of several SPE papers on simulation methods and probabilistic reserves evaluation among others. The book continues the use of the Blackduck Prospect as a running example to illustrate new and more complex points through the text. The book adds some expanded thoughts to an already well developed discussion of expected value, utility theory and risk analysis by bringing in new information and concepts from capital investment analysis, portfolio theory and shareholder valuation. The changes and additions are melded into the old text fairly seamlessly. Users of the 1<sup>st</sup> edition will not have to relearn anything - just pick up a few new tricks.

## Who is John Galt?

**“Atlas Shrugged,”** Rand, Ayn, Random House, 1957  
From page 11 (actually page 1).

“ ‘Who is John Galt?’

The light was ebbing, and Eddie Willers could not distinguish the bum’s face. The bum had said it simply, without expression. But from the sunset far at the end of the street, yellow glints caught his eyes, and the eyes looked straight at Eddie Willers, mocking and still - as if the question had been addressed to the causeless unease within him.”

John Galt is the man who said he would stop the motor of the world and did. John Galt was, as Rand defined him, one of the “prime movers” of the world, a person who by the use of his own talents and abilities, and for his own purposes, created the conditions of productivity from which he and others benefit. He is the person, often nameless and faceless, who invents not only the tools of productivity but the process of implementing that productivity which in turn creates and sustains the jobs that provide income and support to others.

In Rand’s novel, designed to illustrate her own philosophy of Objectivism, one set of protagonists are John Galt along with other like-minded and equally talented persons on one side, and the large mass of less productive folks on the other. The story line is drawn to show a stark contrast between the socialism (and its manifestations from the welfare-state to communism) prevalent in the 1940’s and 50’s in Europe and elsewhere and the self-directed, self-interested capitalism that Rand is convinced is necessary for the salvation of mankind and, most particularly, the human spirit. “Atlas Shrugged,” builds on Rand’s earlier books “The Fountainhead” and “Anthem” to proclaim the value of the individual not as an abstract idea but as a real source of progress.

In the end, fed up with the drains placed on his own productivity by the demands of a statist culture, John Galt stops producing, shrugs, and walks away to the mountains to live with other like-minded souls in a pure barter commune of sorts leaving the welfare state without a source of welfare.

*Atlas Shrugged* struck a resonant note in the late 1950’s, combined with Hayak and other anti-socialist writers. It was disparaged as a glorification of selfishness that had no relation to the real world, particularly the U.S. in the Eisenhower years. Of course, that was after the New Deal but before the Great Society and Medicare. While seeming far-fetched, and parts of the writing do get a bit heavy, the current income tax system obtains over 50% of revenue from only 5% of taxpayers, property taxes cover all manner of services not related to property, and even modest estates are subject to extortionate death taxes. Oh, and the barter commune is subject to imputed income and business taxes.

## Oil Property Valuation meets Business Valuation

As we have noted on these pages before, oil property valuation has much in common with real estate appraisal. Mineral rights are, after all, part of the bundle of rights that comprise real estate. We draw our evaluation methods, particularly the Income Approach, from real estate appraisal. Equally important but less often discussed is the relation of oil property valuation to the practice of appraising a functioning business. This may be because the point of connection is off in the financial/economic analysis side of the evaluation process.

The American Society of Appraisers (ASA) is made up of appraisers of various disciplines including real estate and business evaluation. There is even a small contingent of oil and gas specialist appraisers who, for some reason known only to ASA Central, are categorized with the machinery and equipment folks. So it was a pleasant and valuable development that the Oil and Gas group was invited to participate in the 5<sup>th</sup> Joint Advance Business Valuation Conference sponsored by ASA and the Canadian Institute of Chartered Business Valuators. The purpose was to communicate to the business valuation people some of the esoterica of oil property valuation. This, of course, required putting on my Oily-American routine along with the boots and hat but it was very useful. Most useful was the opportunity to present them with some of our problems - such as developing a discount rate for an individual property from cost of capital data designed for valuing companies. Anyway, the conference was a rousing success and I came away with some good ideas for augmenting discount rates.

For those who are interested please see “*Appraising Oil and Gas Properties as (if they were) Closely Held Corporations*” on our Website under Reports and Studies.

### Other Reading

For those looking for a little holiday reading, I could suggest the following:

“**A Statistical Definition of Value,**” Kummerow Max, The Appraisal Journal, October, 2002, pg. 47.

**Abstract** Property prices are random variables, which means that before a sale occurs, there is a distribution of possible prices. An appraisal can therefore be defined as an estimate of the possible price distribution for the subject property as of a given date. The definition favors improving valuation methods by clarifying the information found in comparable sales - sales are event from distributions of possible prices and so include random variation. Appraisers should add estimates of dispersion of the possible price distribution in addition to the central tendency measures traditionally reported. Moreover, appraisers should forecast future changes in the price distribution to bring rational expectations into appraisals and property decisions.

In the same issue of the Appraisal Journal there is a very spirited discussion of an earlier paper. The discussion, page 438, is titled “**Compliance with Daubert,**” by Bruce R. Weber and is a sort of rebuttal to a critique the author’s prior paper in the January, 2002 Journal. The comparison of viewpoint on the Daubert/Kumho Tire criteria is very interesting, if you are interested in debates of legal v. appraisal requirements, etc.

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Merry Christmas  
and  
Happy New Year!

