

APPRAISING OIL & GAS PROPERTIES

A Newsletter for Appraisal Professionals

Richard J. Miller & Associates, Inc.

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Some News and a Few Views, Take your Pick

In Massachusetts Bay, U.S.S. Constitution, the glorious "Old Ironsides" of the Barbary Wars and 1812, set sail for the first time in over a hundred years manned by enthusiastic young sailors and Marines. The ship was a technological marvel in her time, being faster, stronger, and carrying more throw-weight in cannon than foreign ships of her class. She is a reminder of important periods in our past but also a useful lesson for today. And, just in case the crew got lost, mounted right next to the antique compass was a Global Positioning System readout.

In Washington, liberal Congress people, noting the \$100,000 original cost for the undefeated Constitution, introduced a bill to build all future, if any, naval vessels of wood. The bill was strongly opposed by folks who are fond of embracing trees but Al Gore, known for being somewhat wooden himself, proposed a compromise whereby all remaining ships would be retro-fitted to sail power thereby saving trees and reducing greenhouse gases. When asked about submarines - oh, never mind.

On Mars, a micro-wave oven sized product of American science and engineering, put together from off-the-shelf parts and using air-bags (they had to use real ones - no politicians would volunteer), rolled off its lander and proceeded to make tracks on the Red Planet, analyzing rocks, and driving itself with occasional help from "Dad" back home. In Pasadena, JPL engineers receiving and interpreting data from Sojourner had first to fix modem and software problems from a few billion miles away. Say, can any of you guys get me through on AOL? As we go to press, Pathfinder and Sojourner have signed off, having lasted three times longer than expected.

In Lexington, VA, the Virginia Military Institute, which has provided some of this country's greatest military leaders, interred the cremated remains of "Little Sorrel" on the parade ground under the statue of T.J. Jackson. Little Sorrel was the horse that carried the late Lt. General Jackson, better known as "Stonewall", through most of the battles of the War Between the States (1861-65).

In Temecula, California, official small person, Briena Lillie, is 2 years old and talking a blue-streak. In Darien, Georgia great-aunt Carey turned 105 years young.

At the Palace-in-the-Pines, the aerial acrobatics team of Miller and Lillie completed another death-defying interior painting job atop over-extended ladders while trying to avoid hitting the *x@&! (look out) chandelier.

In Berkeley, California (which may as well be on Mars) the City Council voted to boycott Shell and Chevron for some silly reason. Since Berkeley is already boycotting all the other oil companies, the oh-so politically correct but increasingly anxious populace is now trying to figure out how to connect a back-yard composer to a Volkswagen bus.

In San Francisco, Judge Kozinski, of Daubert fame, has handed down another literary and legal jewel (see Legal Beat). And, speaking of Daubert, see Review of Books and Papers.

On July 4th, our nation celebrated its 221st year of independence. In that time we have passed from being a collection of brash straight-shooting citizen farmers and frontiersmen, graced with intelligent and brave leadership and protected by a wide ocean, into the greatest economic power on earth. That this has come about despite the concerted efforts of government should not be surprising considering our history. But while the nation has grown, our leaders fall ever further behind. We have managed to slide from, "We hold these truths to be self-evident..." and "We the People..." (Jefferson, Hamilton, and Madison) to "I don't recall", "We did nothing illegal," and "There was no controlling legal authority." Some progress.

We began writing with the intent of sending this issue out in September but we have been a tad bit busy so here we are into late December. Best laid plans and all that.

In our July issue we started a discussion of Reserves - What are they? How are they defined? What are the effects of economic conditions on Reserves? We were able to cover a fair amount of ground but, as we say in the Awl Bizz, reserves are a deep subject and deserving of our full attention. To recap the previous discussion: Reserves can be thought of in two ways. There are the physical reserves which is the oil (and gas) that could be recovered by existing technology with no economic constraints. However, economic constraints are always present, leading to a definition of Reserves as those volumes of oil that can be recovered at a profit. The distinction is very important. We had arrived at the point of trying to decide how there could be differences in the volume of reserves determined by different evaluators.

As the curtain rises on Act II, Jessica and Albert are in the library; Jessica says, "Albert, Albert, why oh why do reserves differ so - 'tis it not an exact science in which our consultants labor". Albert replies, "Forsooth I wish twere so, Jessica. (sigh) Alas, 'tis but an applied science evoking answers from the most mysterious of oracles, vexed by the gods of uncertainty, and all boogered-up by concern for financial gain". To which Jessica replies, "Oh Woe! However shall we know how many reserves my poor daddy left me in his will"? "Beats me," says Albert, "lets read on."

Why are there Differences in Reserves?

Differences in estimated Reserves occur for two reasons. The one which seems most obvious is the *physical estimation process*. The estimation of the volume of reserves requires analysis of a large amount of data concerning rock and fluid properties, production decline trends, pressure changes, operating costs, capital investment, and so on. All of this data is subject to interpretation based on data quality and on the ability and experience of the engineer doing the work. It is not uncommon for equally knowledgeable engineers, using the same data, to reach disparate conclusions but the differences, all things considered, should not be all that great and should be reconcilable. This approach is predicated on the notion of reasonable people trying to attain a rational and logical solution to the problem.

The major cause of differences in Reserves, particularly those related to disagreement about value, seems to come from *differing interpretations of the definitions*. Despite the best efforts of API, SPE, and SPEE, no definition can be written that is both foolproof and universally accepted. The equally knowledgeable engineers we met above may disagree about both the volume of Reserves and about whether it is Proved or Probable, or part Proved, part Probable and how much of the Proved is Developed and how much Undeveloped. The differences in category can affect every appraisal value that is based on production and reserves from bank loans to balance sheets to property tax. So, once again, the Words are important.

The 1987 SPE definition (see our July issue) includes six operative phases which act to qualify the "estimated volumes" of Proved Reserves. These are:

- anticipated to be commercially recoverable
- under existing (current) economic conditions
- from a given date forward
- by established operating practices
- under current government regulations
- reasonable certainty

Let's examine these qualifying phrases and see if they could be the source of some of the disagreements over both reserves volumes and the categorization of the reserves. Keep in mind that this general discussion of reserves must be applied to a specific property. As before, "oil" includes gas.

Established Operating Practices Operating practices are those activities engaged in by the operator of the property to develop and expand oil production. Operating practices for a particular field and reservoir do evolve over time, but the oil industry runs on geologic time and things don't change that fast. This is particularly true where Proved Developed reserves are concerned. Here, the primary effects come from improved recompletion and production stimulation methods which act to extend the life of production. Operating practice may become more of an issue when estimating Undeveloped, Secondary, or Probable reserves. New drilling and completion methods, such as horizontal drilling, may require new operating practices to accommodate a well configuration that is literally 90% from previous experience.

The biggest impact can come from the introduction of a "new" enhanced recovery method and/or the ability to produce from reservoirs which were previously closed to development. The introduction of continuous steam injection added tremendous new volumes of reserves to California oil fields just as horizontal drilling and deep water drilling is currently adding reserves elsewhere. But it took several years to develop the operating expertise necessary to ensure recovery of steamflood oil and yet more years for those methods to become industry established practice. The same is true of any new method. Also, some operating practices require a significant learning curve and the experience gained over time in applying those practices can be viewed as an asset by an operator. This same experience is not necessarily an industry-wide asset. Therefore, when evaluating a property, the appraiser must not only determine that a certain operating practice can be applied to a property (based on physical and economic criteria) but must also consider whether the practice can be applied by any likely operator of a property and if it requires some exceptional expertise.

Reserves in a particular field or reservoir are *not* increased simply because the appraiser believes that a certain operating practice *could* be implemented. One must first consider a few questions. Has the particular operating practice been used in this field or region? Used long enough to be established? What were the results? If it was used in the same field as the property being appraised - Was it in the same reservoir? Are the geologic or reservoir conditions the same or are there differences that could impede the process? If the practice has not been used in the same field, how can you be reasonably certain that the procedure can be successfully transferred? Has a pilot project been done? These are serious considerations. Reserves cannot be attributed to these practices until they are proven and accepted.

As a corollary issue, new practices can also include new or novel methods of reserves calculation. Estimating reserves for horizontal wells or for a steamflood in dipping sands may require development of new evaluation methods but again these methods, like the practices to which they relate, must be tested, proven, and accepted. Only then do new practices become established.

Anticipated to be Commercially Recoverable This means recoverable at a profit. If the cost to produce a barrel of oil is less than the price that will be received for that barrel, there is an economic return for the production. The production is economic and there are Reserves. On the other hand, if the cost of production exceeds the product price then there is no economic return and the property has no Reserves.

The salient aspect of the Commercially Recoverable phrase is that it transforms Reserves from a physical volume to an economic commodity; the amount of oil in the ground is important but it is constrained by how much can be produced until it is no longer profitable to do so. Reserves are estimated not to the end of production but to the point that production ceases to be profitable. This point is the ***Economic Limit of Production***. (Note: This portentous phrase should be enunciated in a basso tremulous voice with accompanying drumroll followed by the sound of a slamming door.)

Interestingly, the Economic Limit is calculated as a rate of production, so many Bbls/Day. When, by definition or actual practice, Reserves become circumscribed by an Economic Limit, the parameters which are used to calculate the Economic Limit become very important. Depending on how the prices and costs are established and applied by the evaluator, a property can be uneconomic and have no reserves, or it can have revenue of \$2-3 per barrel over cost and have 20 years of remaining production with reserves to match. While differences in prices and cost directly effect the income from the property, the primary influence of prices and costs on Reserves is at the margin where the Economic Limit may be extended or shortened thus adding or reducing reserves. If, all other factors are held constant, an increase (decrease) in oil price or increase (decline) in operating costs should result in a lower Economic Limit which in turn should result in an increase (decrease) in Reserves.

In the *Economic Limit* equation, the product price tends to receive the most discussion, often to the exclusion of the operating costs. However, the production costs are the part of the equation most open to differences in determination and application. Operating costs should be based on historical data for the subject property. However, differences in Reserves can result if one appraiser classes a certain cost as *fixed* while another appraiser considers the same cost to be *variable* (changing based on the number of wells or volume of production). I recall a case where an evaluator

totalled all the operating costs for a waterflood, which he divided by the number of producing wells, and then began dropping off wells while increasing production. This creative approach doubled the appraised Reserves in comparison to the actual Reserves.

It is the Existing Economic Conditions qualifier that seems to cause the most confusion. And, here again, the Words are important. When referring to Reserves generally, the SPE 1987 definition says "existing" economic conditions. However, when referring to Proved Reserves, the definition says, "under current economic conditions" and then goes on to define "current" conditions to "... include prices and costs prevailing at the time of the estimate...." (emphasis added). There are a couple of problems here which seem minor but are actually very important. First, "existing" and "current" do not necessarily mean the same thing. "Current" is commonly synonymous with "prevailing" and could be interpreted as being more time- or data-specific than "existing" which can imply longer duration. If I were in a feisty mood, I could pick a really good debate over that issue. Second, whether current or existing or both; What is really intended by the language used in the definition? It seems clear that the intent is to define Reserves as of a given date based on the economic conditions on that date, with the implication that those conditions should prevail without change over the life of the production projection; in other words - no escalation. This is made very clear in SPEE Monograph 1 which states explicitly that, "...if reserves are increased by escalating the prices of oil and/or gas, the additional reserves must be classified as unproved reserves..." Presumably they are Probable or Possible but not Proved reserves.

Part of this concern about application of economic conditions is historical artifact, part is a reaction to the late 1970's and early 1980's, and part is, as we shall see, the SEC tail wagging the dog. It is historical in that the 1962 API definition (see July issue) also refers to "current prices and costs", and the language just got carried along. It was not common practice to escalate prices or costs in the 1960's. In 1962, oil was \$2.00 and going down in real terms. By the late 1970's however, everyone was escalating prices to \$60 or \$100 a barrel; oil which was worthless in 1970 was a valued resource in 1980. But by 1986, the same oil was a major liability mostly because of unwarranted exuberance in oil and gas pricing, foolish lending, and silly government policies. Price/Cost escalation had gotten a bad name. So the 1987 definitions were written with an implied prohibition against escalation. In the meantime, the SEC made its contribution by requiring Reserves to be determined with flat price and cost projections.

Having said all that, it is important to note that the SPE definition implies but does not mandate flat price/cost projections. The fact is that many Reserves evaluations done for acquisitions and other uses include escalated price/cost parameters. These evaluations make no distinction among Reserves classes based on escalation.

It seems to me that "existing economic conditions" include more than just the prices and costs prevalent at the time. Existing economic conditions include all the conditions which may influence the future production of oil and gas. Oil prices have not remained constant at any level since (at least) 1973 and, in truth, never were flat before then. Operating costs from electric power to salaries and wages to taxes have not remained constant. So, why should Reserves estimates be based on any expectation that they would remain so in the future? If we look at the past and see that prices and costs have not been flat, then why assume the future will be different? Engineers and appraisers must apply judgement and extrapolated knowledge to every other facet of Reserves

estimation; why check that judgement at the door where economic conditions are concerned? Reserves estimates may be more distorted by the choice of initial price than by any subsequent escalation. Prices taken at a peak or trough can produce far more erroneous Reserve estimates than any rational escalation.

There is a valid concern to avoid wide swings in Reserves figures based solely on differences in price/cost projections. But, if there is adequate reason to believe that the price will go up, then why not take that into account in estimating the Reserves? The result will be wrong because projecting prices is a crap-shoot, but is it any more wrong than pretending prices will be flat? In fact, that is what most evaluators do and, since opinions as to the course of future events which would influence oil price and operating costs tend to differ, so do reserves estimates.

It should be noted that the unstated concern about escalated prices (costs rarely receive a mention in the discussion) is that escalation means increasing prices along with the expected increase in reserves. Escalation does not have to be positive. Historical data shows that oil prices have been declining in real terms over the past 50-60 years and certainly since 1980. Despite downsizing, etc. and the best efforts of Alan Greenspan, inflation and cost increases are unavoidable. So, except for some brief periods, the "existing economic conditions" are that oil price increases do not keep up with cost increases; there is a net decline in a real oil price over time. Keep in mind, economic conditions include far more than just product prices and operating costs.

From a Given Date Forward. At first glance this should be the easiest part of the equation. Every appraisal has to have a starting date or effective date or as-of-date; whatever you choose to call it. Production projections, calculations of reserves, estimates of future income, and perceptions of value lose some meaning and comparability when the starting point is unknown. This is, of course, brought about by the economic nature of Reserves and, since economic conditions change, it is necessary to specify a starting date.

But, is the effective date literal or figurative? If the effective date is October 1, 1997 does that mean that the only conditions, economic or otherwise, that would apply are those prevailing on October 1, 1997? Or is the meaning a bit looser so that I could refer to conditions prevailing on or about October 1, 1997. Of course, if I opt for the looser interpretation how far can I stretch the "about" part - a week? a month? 90-days? You see how things can get out of hand? It was just this sort of laxness that caused Rome to fall.

The answer, of course, is that the appraiser has to exercise some judgement. Appraisal is not so rigorous or doctrinaire that we should use only those conditions - production rate, oil price, operating costs - which occur on a specific date. That would be kind of silly when making an estimate that goes out for 20 or 30 years involving umpteen different uncontrollable factors. On the other hand, one should not get carried away. An appraisal for October might be suspect if it used July or December pricing and a production increase or (heaven forbid) a decline that occurred 3 months after the lien date. Consistency is important.

Speaking of Pandora's Box - does anyone really know what "Under Current Government Regulations" means? Sometime in the future we plan an entire issue on the influence of government regulations on oil property appraisal so we will only test the water here. But think about this for a

minute - take longer if you like. What does that phrase include? There are laws, statutes, rules, and regulations covering everything that we do from conception to several generations after death. There are federal, state, local, county, city, township, school district, and appraisal district regulations. There are written regulations and there are interpretations. Oh, wait, I forgot permits, licenses, and assessments. Then there are those "regulations" that grow out of bureaucratic interpretation and expansion of over-broad legislation. For instance, did you know that the Army Corps of Engineers has no statutory authority to take any action regarding so-called "wetlands protection"? Do "wetlands" issues influence property values? How about Endangered Species or Coastal Management? or Air Quality Management?

No appraisal can consider all the possible government regulations that could apply to a property and influence its value. If we ignore value and concentrate only on those regulations that might influence Reserves we can let a little light into the forest but it is still pretty gloomy. A few examples: If we have a property that is an ideal candidate for steam injection with millions of barrels of potential Reserves, BUT local ordinance prohibits the installation of steam generators, are there any Reserves? If you have a property which is located in a wildlife refuge - well, that is too easy. What if you have a property that is directly in the path of encroaching urban/suburban spawl where the real estate value is increasing as the oil production declines. Do you really think you can project production for 30-years when the land owner wants to replace your pumping unit with a video store and a tattoo parlor? Lastly, are not taxes "government regulations"? If the answer is Yes, and I dare you to answer No, does that not mean that Reserves can only be determined based on an after income tax cash flow and/or an Economic Limit where costs include taxes? Don't you find it mildly curious that current practice usually results in a BFIT Reserve volume and an AFIT value for those same Reserves?

Needless to say the appraiser must take into account all prevailing conditions imposed by government which could influence the estimate of Reserves, including those that are not really legal. But not all appraisers will agree that (1) a certain regulation applies to a property or (2) what the effect of the regulation is in terms of Reserves. Differing interpretations of the law keeps attorneys in business. A short checklist might be helpful. Start with the obvious: Unitization, pooling, and spacing rules. Add zoning, environmental constraints, and permit conditions. Don't forget the taxes - severance, production, and per-well taxes. The first few items can control the development of a property while the latter impact the Economic Limit. Regulation has a way of reducing not increasing Reserves.

But now comes the Grand Poobah, the Issue of Issues, the conundrum that whole books are written about - Reasonable Certainty. The narrative of the 1987 SPE definitions states that, "All reserves estimates involve some degree of uncertainty... The relative degree of uncertainty maybe be conveyed by placing reserves in one of two classifications, either proved or unproved."

As noted before, we will limit ourselves to Proved reserves which, "...can be estimated with reasonable certainty to be recoverable under current economic conditions..... Proved reserves may be developed or undeveloped."

So, just what is Reasonable Certainty? What level of certainty is reasonable enough to allow Reserves to be classed as Proved? If I flip a coin once there is a 50% chance that it will turn up

heads - I can be reasonably certain of that. Is 50% enough to be Proved? I don't think so. The "reasonably certain" criteria applies to all the facets of the reserves determination from the initial production rate to the anticipated pace of development to decline rates to economic conditions. Consider the easiest case - a Proved Developed Producing property that has been in production and steadily declining for 15 years. If you give the production data to 10 equally qualified engineers you will get 10 different estimates of initial rate, decline rate, and remaining recovery (reserves). Not greatly different but different nonetheless. The standard deviation of the result might represent the Reasonable Uncertainty. If the data is more open to interpretation then the results are likely to be more divergent.

There is a move afoot in SPE and elsewhere to move to a "Probabilistic" form of describing reserves which, in essence, seeks to define reserves based on the mathematical likelihood of recovery; reserves would have to be (pick a number) 85% certain of recovery to be classed as Proved. The current, or existing if you prefer, approach is called the Deterministic method - otherwise known as the Best Estimate I Can Make with the Data, Knowledge, and Experience which I Process Today or BECMDKEPT. Despite many seminars, workshops, learned papers, and convivial discussions, the jury is still out on which of the two is better. SPE gives a nod toward the Probabilistic approach in the new 1997 definitions but does not quite adopt it. The "P" approach is an attempt to quantify Reasonable Certainty. My personal take on it thus far is that it is mildly confusing and, in the wrong hands, opens the door to all sorts of mischief. I suppose the same thing was said about fire and the wheel. ("Put those round things on a log and before long....."). Lest I sound too negative, there are some very good people working on this issue and the future, as they say, is before us.

The Reasonable Certainty criteria impacts Reserves in two ways: the estimated volume of Reserves and the classification of Reserves. As you might imagine, the two are linked. Here's an example. I recently did an appraisal of a property that had been in production for almost 30 years and where there were over 50 wells including redrills and recompletions. The joint operator(s) were knowledgeable and had done their own geologic and engineering studies of the field. One part of the latest study recommended several redrills into a proven but relatively undrained part of the field (hope springs eternal). The company estimate of reserves for each new well was 6-7 million barrels, based on a single high performing well drilled 10 years before, and were classed as Proved. The problem was that analysis of the other wells in the field indicated an average ultimate recovery of only 2.5 million Bbls per well with only small variation among the wells and the usual anomalous high and low volume wells. There is a reasonable certainty that a new well could recover 2.5 million Bbls (\pm) which could then be classed as Proved but there is less certainty of recovering more than 2.5 million Bbls. There is a range of values above and below 2.5 million Bbls within which the vagaries of geology, reservoir mechanics, and operating practice limit the accuracy of the reserves estimate. Outside that range, and particularly on the upside, the ability to accurately estimate reserves is impeded because the data gets thinner. When information gets thin, the ability to estimate accurately goes down and uncertainty increases. Going from 2.5 to 6.7 million is a real stretch. To me 2.5 million was Proved and 4.2 million was Probable at best. Other appraisers may differ. Note also that the Proved reserves are classed as Proved Undeveloped until a well is drilled at which time they may be re-classed as Proved Producing.

Keep in mind that the Reasonable Certainty criteria applies to *all* the components of the Reserves estimate including the income projection. Reserves which are "created" by overly exuberant price projections, either by justifying new development or extending the economic limit, are subject to the same reasonable certainty scrutiny as are Reserves based on excessively optimistic geology and reservoir engineering. Price and cost projections have to be based on rational analysis - not wishful thinking, off-the-wall theory, or isolated case.

Other Reserves Definitions

A discussion of the concept of reserves would not be complete without a quick excursion into one or two other definitions of Reserves and associated value which are of interest. The so-called **Securities and Exchange Commission** ("SEC") definition is essentially the same as the SPE or industry definition with one important difference. The SEC requires that Reserves be determined at the price and costs in effect on the date of appraisal and implies that all other factors also relate to that date. SEC also requires the use of a 10% BFIT discount rate. The SEC definition is a good example of the ability of government regulation to impact the real world. The SEC requires that publicly-traded companies report Reserves to shareholders in their annual report and other SEC filings. Aside from ensuring employment for a lot of consulting furs, this started out as a modest proposal - sort of like Medicare - but, this little tail now wags the dog as far as Reserves are concerned. The implied use of flat price/cost in the SPE definitions reflects, in part, the influence of the SEC.

Here in the Golden State we have our own way of doing things and that applies to defining Reserves as well as to other less reputable endeavors. **Property Tax Rule 468** defines Reserves for property tax purposes as follows: "Proved reserves are those reserves which geological and engineering information indicate with reasonable certainty to be recoverable in the future, taking into account *reasonable projected physical and economic operating conditions*. (Emphasis added) 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."

The fastidious observer will note that the Rule 468 definition seems to leave out a few things such as commercial recovery, a reference date, and the consideration of established operating practices. These seemingly missing elements might suggest a more loosey-goosey approach to Reserves determination; the term of art used by some practitioners is "expansive". However, the 468 definition is no more expansive or less deliberate than the SPE definition. In fact, it may be more restrictive because of the emphasis placed on information "...considered by knowledgeable and informed persons engaged in the operation and buying and selling of such (oil) properties..." This unobtrusive caveat serves as a reality check (or should) on the otherwise unfettered speculation of evaluators.

Legal Beat

Dominguez Energy, LP. v. County of Los Angeles; 56 Cal. App. 4th 839.

Assessor must consider environmental cleanup expense paid in compliance with land use statutes for year paid.

Dominguez Energy, L.P. (hereafter Dominguez) sought a partial refund of property taxes for the 1990 tax year on its working interest in an oil and gas lease. Since acquiring the interest in 1983, Dominguez had performed and had scheduled ongoing environmental remediation of the property, including sump removal, abandonment of unused wells, wastewater discharge, capture of leaking hydrocarbons, and restoration of the surface land around abandoned wells. The issue resolved by the court was how the expense of the environmental cleanups should be treated in the tax assessor's valuation of the property under the income capitalization method of appraisal. The Los Angeles County Assessor had concluded that the cost of environmental remediation should be allocated to the final year of the lease, which resulted in a higher property tax assessment for the 1990 tax year than would have occurred if the expenses were allocated as scheduled, which was the method advocated by Dominguez. Dominguez contended that the assessor's method violated Revenue and Taxation Code section 402.1 (hereafter 402.1), which provides that in assessing the value of land the assessor "...shall consider the effect upon value of any enforceable restrictions to which the use of the land may be subjected..." including, but not limited to environmental constraints, applied to the use of the land pursuant to provisions of statutes.

The Los Angeles County Assessment Appeals Board upheld the assessor's valuation. In Dominguez's action for partial refund of taxes the Superior Court held the assessor's method violates 402.1; the court remanded the matter to the Board for reassessment in conformity with the court's decision. In compliance, the Board reassessed the property, which reduced the assessment by \$2,180,002, and reduced the tax by \$23,113. The County of Los Angeles (the Assessor) subsequently appealed from the Superior Court judgment granting a partial tax refund. The Court of Appeal affirmed the Superior Court decision that the assessor's method of valuation was arbitrary, in excess of discretion, and contrary to the standards prescribed by 402.1.

While this is a California case relating to property tax, it is an affirmation that the costs of abandonment and restoration must be considered in the appraisal of oil properties for tax or any other purpose. This may be a more substantive issue in California where a combination of age, economics, and regulatory activity make such considerations of immediate concern, however, the issue should not be ignored in any appraisal. The Dominguez decision reinforces and supplements the decision by the State Board of Equalization in 1996 to elevate the issue of inclusion of abandonment costs in appraisal for property tax (AH566 - August, 1996) to the point of suggesting the use of a sinking fund approach to amass necessary funds from property specific cash flow.

From the Wall Street Journal (7/24/97):

From a concurring opinion by Judge Alex Kozinski of the Ninth U.S. Circuit Court of Appeals in the case of Smith v. McGlothlin. Beth Ann Smith, a 16-year-old high school student in Escondido, Calif., was among several students who were searched after being caught smoking. A school security guard found several knives in her possession, and she was suspended. She sued the guard, alleging that the search violated her civil rights. A U.S. district judge dismissed her claim; on July 17 the Circuit rejected her appeal.

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"Smith's complaint is a triumph of petulance over common sense. A teenager who gets into trouble because she is caught bringing knives to school might, for lack of mature judgment, feel that she is the one who has been wronged. But she can't turn such wishful thinking into a lawsuit without support from her parents and the services of a lawyer - adults who do not have youth and inexperience as excuses. Before bringing suit, Smith parents might profitably have pondered their own culpability and considered what they might have done to prevent their child's misconduct. Smith's lawyer might have thought about whether it was right to impose the cost, risk and pain of a lawsuit on a civil servant who acted responsibly under difficult circumstances. And Smith herself might have thanked her lucky stars when she got off easy because her juvenile court judge mis-read the law and suppressed the evidence. Smith and the adults who abetted her might all have taken a few lessons in common sense from the other students who were subject to the same search - and thus suffered the same "harm" - but did not make a federal case out of it."

"There are, unfortunately, too many instances of genuine official abuse... Our ability to deal with such cases is diminished when the civil rights laws are trivialized as they were here. It reflects ill on the legal profession and our litigious society that this vexatious lawsuit was filed at all, and that it's been pursued this far."

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Reviews of Books and Papers

Whilst parked on my tail in various courtrooms lately I was able to get caught up on my reading and at least glance at some newly arrived material.

Sagan, Carl "The Demon-Haunted World: Science as a Candle in the Dark", Random House, 1995.

Some people like the late Dr. Sagan's work; others don't. While I do find some of his writing a bit preachy it is generally good stuff. The general theme of this book, his last before his death earlier this year, is the growing danger to civilization as we know it from a diminishing knowledge of, and interest in, science, particularly at a time when both our everyday lives and major political issues require that we be able to understand the science behind them. Dr. Sagan discusses several interesting topics including beliefs in UFO's and other sundry amusements. My favorite chapter is entitled "The Fine Art of Baloney Detection," which aptly describes a lot of the work I do from time to time and also touches on the Junk Science issue that has been mentioned in these pages in the

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past. The primary precept of this chapter is that "Baloney" whether in the National Enquirer, White House press releases, or appraisal reports is detectable by following a few simple rules. From the book:

"Science may be hard to understand. It may challenge cherished beliefs. But one thing you have to say for it: It delivers the goods.... The reason science works so well is partly that built in error-correcting machinery. There are no forbidden questions in science, no matters too sensitive or delicate to be probed, no sacred truths.... You must prove your case in the face of determined, expert criticism. Diversity and debate are valued. Opinions are encouraged to contend - substantively and in depths."

"What skeptical thinking boils down to is the means to construct, and to understand, a reasoned argument and - especially important - to recognize a fallacious or fraudulent argument. The question is not whether we like the conclusion that emerges out of a train of reasoning, but whether the conclusion *follows* from the premise or stating point and whether that premise is true."

"In addition to teaching us what to do when evaluating a claim to knowledge, any good baloney detection kit must also teach us what *not* to do. It helps us recognize the most common and perilous fallacies of logic and rhetoric."

Bernstein, Peter L, "Against the Gods: The Remarkable Story of Risk", John Wiley & Sons, Inc., New York, 1996.

This is not a novel nor is it for the mathematically dis-inclined. The book explores the nature and history of risk and uncertainty both as abstracts and as measurable functions of choice subject to mathematical analysis and statistical proof. Mr. Bernstein starts with a discussion of risk as related to one of Man's oldest pastimes, gambling, and proceeds onward to ever more complex uncertainty theory to discussions of the stock market and other applications of risk. There is a lot to absorb here but it is well written and the author avoids equations and other academic meandering to convey the subject, which is without doubt one of the driest ever conceived, in a remarkably articulate and user-friendly manner.

"New Requirements for the Appraisal Expert Witness", Hoyt, Richard W. and Aaberts, Robert J., The Appraisal Journal, October 1997, pg. 342.

A year or so ago we reviewed the Daubert v. Merrill Dow decision regarding expert witness testimony and speculated on how it might impact oil property valuation and appraisal. This paper by Messers Hoyt and Aaberts is an excellent discussion of that impact - which came quicker than I would have thought - and includes reviews of four court cases where an expert appraisal witnesses ran up against the Daubert criteria. The paper is well written and a must read for any appraiser venturing close to a courtroom.

Good Electrons, Bad Electrons

My senior Editor has called to my attention an advertisement (in the Sunday L.A. Times) by Southern California Edison - the local purveyor of electricity - to the effect that an SCE customer

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could reduce their electric bill by up to 10% if they elected to take 25% of their electricity from renewable sources, and up to 25% if they took 50% of their power from the same sources. This, I thought, is intriguing and deserving of further consideration.

Of course, I was surprised because I thought all the so-called renewable sources disappeared when the Federal subsidies stopped, but the more interesting question was: How are they going to do this? What I remember of electricity comes from classes in the 60's and from trying to cut through live wires, but I recall that electricity consists of electrons running down a wire like water in a pipe. There is a "Smoke Theory" but I'll save that for later. Anyway, all these electrons come from different places and get all jumbled together sort of like commuters on the freeway. Electrons from renewable ("R") sources are no different than electrons from a nuclear or (yuck!) oil fired ("Y") power plants so when they get to my door how does SCE separate the R electrons from the Y electrons? Do they have each one wear a sign (very small) or paint the R's green and the Y's black? Maybe all the R's march down the left side of the wire and SCE builds little off ramps at each house. Maybe they put in special wires - sort of like HOV or diamond lanes (we waste a lot of money on those out here) from the nearest windmill farm to my house. Or maybe they install a little gate on the power main at my house that says "R's Only" and they have to know the password to get in?

Reports and Studies

The 16th Annual SPEE Survey of Economic Parameters Used in Property Evaluation was published in June, 1997. The survey attempts to obtain opinions from the evaluation community regarding future prices, cost escalation, probability or risk adjustment factors, economic indices, and other evaluation criteria relating to petroleum property evaluation in the United States. Respondents to the survey include 96 producers, 90 consultants, and 26 bankers. The survey results (as of May, 1997) found average oil price escalation to 2005 of 2.00% per year; average gas price escalation of 2.90% per year; and average operating cost escalation of 3.00% per year.

The average discount rate for valuing acquisitions was 14.0%. Acquisition Adjustment Factors are enumerated by Reserve class where Proved Producing has an average adjustment of 96.0% and Proved Undeveloped is 59.0%.

Of the respondents 38.0% (a decline) apply risk adjustment to reserves (production) and 44% apply risk adjustment to the cash flow; 18.0% (an increase) apply risk to both reserves and cash flow. If the adjustment is applied uniformly to the cash flow, the effective average discount rate would be 14.5% for Proved Producing and 23.7% for Proved Undeveloped. The survey range is not that different from the range found for actual sales and is consistent with prior years surveys. SPEE, P.O. Box 27709, Houston, TX 77227 (713) 651-1639.

Christmas for Cowboys

Tall in the saddle, we spend Christmas Day
Driving the cattle over snow covered plains
All o f the good gifts given today
Ours is the sky and the wide-open range

Back in the city they have different ways
Football and eggnog and Christmas parades
I'll take the blanket, I'll take the range
Christmas for Cowboys on the wide-open plains

A campfire for warmth as we stop for the night
The stars overhead for Christmas tree lights
The wind sings a hymn as we bow down to pray
Christmas for Cowboys on the wide-open plains

John Denver (1943-1997)

Poet, Entertainer, Conscience, and Inspiration