

APPRAISING OIL & GAS PROPERTIES

A Newsletter for Appraisal Professionals

Richard J. Miller & Associates, Inc.

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(I am not) "...going to fire a \$2 million missile at a \$10 empty tent and hit a camel in the butt. It's going to be decisive."

President George W. Bush

There is a lot of news since our last visit. We have recently returned from a cross-country test of the new airport security regulations with stops in New Orleans, for the SPE Annual extravaganza; and in Charleston, to find a location for the 2003 SPEE Annual Meeting. We are pleased to say that the trip was a success. We have a list of excellent restaurants and other eating establishments in both places that is available free of charge. Operators are standing by. We need to bring everyone up to date on progress on the Pine Palace and our adventures with various furry varmints. There is also an update on the Gray Davis Electric Power and Manure Company.

On the serious side, which is, after all, my excuse for writing this newsletter, we are going to take a look at adjusting the Cost-of-Capital to account for Return-of-Investment and we examine the role of Management in the value decision process. And we have a couple of smashing Book Reviews. We will embark on a discussion of both the new SPE Reserve Estimating Standards and the recently published SPEE Recommended Evaluation Practices. So, go get another cup of coffee, bring up something that looks like work on your computer screen, assume your best "ponderous thought" mode and let's chat.

We, as in the Madam and I, are done. We have finished painting. Every square inch of the Cedar Chateau is now either Granite Gray or Forest Green. We got the final touch-ups done in mid-July; only 3 years and 2 weeks from start to finish. No damage, no injuries (well, no big ones) and it actually looks pretty good; at least, none of it has peeled off yet. We had our finicky daughter-in-law check it out and sign off on the approval, so that job is now off the To Do List that is posted on the fridge. Along the way we accumulated a lot of painting (and other) experience that I plan to share in a future newsletter. One thing that added to the time was that we found that the original T-111 siding was not attached to the frame as tightly as one might hope - some nails were loose and others completely missed the studs. About 1 out of 4 was actually holding anything together. Since we are only a few miles from the San Andreas fault, strengthening the structure for earthquakes seems important and the siding is a useful part of holding the house together. So we ended up having to re-nail the entire outside surface of the house on 4" centers. That's a lot of nails. Our only real concern now is that all the nails we put in have created a disturbance in The Force and is probably fouling up our neighbor's satellite TV reception.

We seem to have solved the squirrel problem (see last issue) - at least for this year. The Great Green Squirrel Feeding Machine that we bought did the trick after I moved it to the other end of the house and filled it with squirrel goodies. We got lots of advice and commiseration from readers and, except for the fellow who suggested that it sounded like a battle of equals, we thank you.

The Late, Great California Energy Debate In case you missed it, the oft-foretold and much bemoaned California Energy Crises did not happen. Nope, Boys and Girls, a spell of cool weather plus some cranking back on the light switches, etc., resulted in an uneventful slide through summer. Add to that a bunch of new and not so new generating capacity and, Whoa!, we got us a surplus. Lest you believe, however, that the erstwhile Golden State is back to "normal," whatever that is, let me regale you with the latest. In the space of about 12 months the Gray Davis (Our GOV) Electric Power and Manure Company has managed to bring about the bankruptcy of one (maybe both) of the country's largest investor owned utilities; saddled taxpayers/rate payers with several billion dollars in new state debt; committed the state to buy power on long-term contracts with fixed prices which substantially exceed the going market price; acquired the obsolete transmission system; blown the state budget surplus; and created a new state agency that conflicts with the PUC. Along the way, GDEP&M hired a flock of consultants who not only got paid ridiculous fees but had conflicts of interest to boot. As we speak, California is *selling* electric power that was purchased under the GOV's long term contracts at much lower market prices. Back in January, the GOV said that he could solve the problem in 20 minutes if he allowed rates to follow the market. But, No. Instead, the GOV decided that the STATE would become the market and control supply, demand and prices. Anybody want to buy some power? Cheap!

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Discount Rates

A number of readers over the years have asked why so much of the discussion in the newsletter involves the discount rate as opposed to other appraisal issues such as production projections and “engineering/geology” things. There are several reasons. First, engineering/geology topics such as reserves estimation, production projections, and cost control are reasonably well covered in journals and papers by SPE, SPEE, AAPG and others. Our focus has been on the economic side of appraisal primarily because it is a very important, but seemingly neglected, subject. With the exception of the bi-annual SPE Hydrocarbon Economics and Evaluation Symposium (HEES) meeting there is little industry discussion of evaluation practice.

Second, our experience in Market Value appraisal suggests that the discount rate can have more impact on value than any other single component of an economic evaluation. All the carefully constructed production schedules and scrupulously researched product price projections can be reduced to Zip point Nada by the discount rate. At the same time, the discount rate is possibly the least understood and most misused component of the evaluation. Third, a large part of the work of this firm is derived from the analysis of discount rates for use in market value appraisal, due largely to our access to otherwise confidential market information. That gives us a perspective on the issue that we feel a duty to share.

In this issue, we start to focus on some of the details of discount rate analysis and selection for appraisal use. One of the more lively discussions about the discount rate has to do with the Return-of-Investment. But first, let us digress.

SPEE Recommended Evaluation Practices

George Bernard Shaw - or some other equally erudite person - once said that the British and American people were close relatives separated by a common language - or something like that. We, you and I collectively, presume that he meant that even though both peoples speak English our respective usage of the language may tend to inhibit understanding and communication. That which is true on a national scale is also true in smaller units such as within and among professions. Even if we leave aside the proliferation of jargon in professional commentary, on it is not uncommon for confusion and misunderstanding to occur in everyday conversation. Groups and individuals assign different meanings and interpretations to technical and non-technical terms which are in general use and for which a common understanding ought to exist. This occurs not only between professions but within professions, so it is hardly surprising we cannot explain our issues to regulators, judges, management or the general public.

Consider, for instance, the on-going debate over Deterministic/Probabilistic reserves. Our firm only values Proved reserves so I do not have much need for Probabilistic

methods but I took a short-course from a good friend recently so I guess I am qualified to spout off. Maybe later. For now I am content to sit on the side-lines and watch the fun. Watching is easy to do these days if you are tapped into the SPE Technical Interest Group e-mail circuit. A few months ago there was a lively discussion going back and forth about whether Proved Reserves were P90 or P10. Apparently one commonly used software program uses P10 but another program uses P90. The tone of the discussion was sort of like kids choosing up sides at the sand lot. As far as I know, the issue is unresolved. Now you would think that as we get ready to plunge off into the Brave New World of Probabilistic reserves (there is no similar problem with Deterministic) we could at least agree on whether it is P90 or P10. Who cares, so long as they are Reasonably Certain?

There was a point to this and I am getting there. The communication problem became very apparent during the SPEE Software Symposium last year (March, 2000). Of the 10-12 evaluation software packages being reviewed, many used the same terms such Net Operating Profit, Cash Flow, Net Revenue, Rate-of-Return but the meaning of the terms was different in some cases as was the calculation process to get there. It was found that the timing of reversions and the form of discounting was different. One of the biggest issues was a difference of opinion regarding the form and definition of Nominal and Effective decline rates. In the ensuing debates, it also became apparent that the confusion and misunderstanding was not limited to the software but was prevalent in the evaluation community at large. In response, SPEE set out to study and make recommendations for the standardization of terms and calculation procedures that we use everyday to evaluate oil and gas properties and, just as important, communicate the results of that evaluation to our management, clients and others. The job was taken on by the Denver Chapter of SPEE and some of the product of that work is now available in the form of draft Recommended Evaluation Procedures (REP's) posted on the SPEE Website (www.SPEE.org). These drafts are open for general comment so browse through and see what you think.

The REP's are a good start toward reducing some of this confusion and are to be encouraged. It should not be surprising that in some respects one or two of them illustrate the problem as much as the solution. REP 2001 for instance, titled “Profit to Investment Ratio,” does not refer to P/I but instead offers the term “Return on Investment (ROI)” which is defined as “Net Operating Income (NOI) Before Investment divided by Investment”. There are a couple of problems here. One, ROI is defined elsewhere, including in most financial management and petroleum evaluation texts as (a) the average annual Net Cash Flow (NOI minus Investment) divided by Investment and (b) is expressed as a percentage rate similar to an interest rate. Using ROI to refer to a ratio of total NOI to Investment is bound to cause confusion with more traditional and established usage. Second, the use of the ratio of NOI to Investment is not particularly common in evaluation practice and there is no identified authority. Third, the new term ROI is easily confused

with the ratio of “Net Cashflow to Investment” which is commonly termed “Profit to Investment Ratio” (in oil and gas usage) or “Profitability Index” (in financial analysis).

Since the primary consumers of evaluation products are management and financial types, it would seem that a useful approach would be to encourage common definitions and interpretations rather than cling to parochial usage. That said, the REP’s are a necessary and welcome addition to the evaluation profession that should, in time, achieve a status as industry standards.

So Then We Took The Plan To Management

We have all been there. You have spent weeks working up the evaluation of a property for a project or acquisition. You did all your homework, checked the source of all the data, ran multiple cash flows to test alternative economic conditions and results, and then, using the company’s (client’s) approved economic criteria, determined the appropriate offering price for the property. So, off you go, hair combed, shoes shined, pocket protector squared away, to present the plan to SENIOR MANAGEMENT.

With all the Big Guys staring at you, you clear your throat, pray that your PowerPoint gadget works, and start into your presentation. At the end you say, “So, based on the exhaustive work of our evaluation, the maximum we can offer for this property at our 12% AFIT hurdle rate is \$2,000,000.” All done, right? They approve your evaluation and you go off to negotiate a deal at something under \$2 million.

No way, Jose!. The questions start. Is this a sealed or open bid sale? - Who are we bidding against? - What do they know? - What’s the upside? - This fits well with that Roadkill property we bought last year. Sure would be good if we could get it! - Lots of Proved reserves would spiff up the annual report! - This is heavy oil. Can we use that Tar Sands tax credit? - We can reduce some costs by consolidating. - We can make up the return on long-term refinery stock and offset with hedges! - OK, Fred, go offer \$2.3 million!

What has happened here? The appraisal value of the property is \$2 million. You offer \$2.3 million and, ta da, you win - sort of. You later find out that other buyers evaluated the property at an average of \$2 million.

What has happened is that management has assumed a *Business Decision* role toward the acquisition and, in the process, converted the evaluation of the income stream from a specific property into a component of a larger corporate entity; that is, the property may have a value as part of the whole that is greater than its value standing alone. The management discussion touched on issues from property consolidation and expanding Proved reserves to feed stock and income tax credits. This increment of value is very difficult to measure because each

potential buyer will evaluate not just the property but the opportunity differently. However, assuming reasonably knowledgeable and informed persons are at work, the differences in final values should not be that great and the successful offer is still considered to be representative of the market. The *Business Decision* aspect of the property value is built into the price and resulting market value.

Sealed bid deals have often been questionable as market value transactions because of the extra element of uncertainty which accompanies a bid. We have discussed fair market value in the past and will not go back over all that acreage again. But even in that discussion, there is concern about the sealed bid process where the seller simply selects the highest bid. This process serves a purpose in government lease sales (OCS and elsewhere) of removing opportunities for favoritism, etc., and, of course, sellers generally accept the highest offer. The additional uncertainty comes from the inability to gauge the actions of other bidders, potential and actual. In a negotiated transaction, the seller has an incentive to play off one bidder against another and skillful players can gain some insight into relative positions of bidders. In a sealed bid procedure this ability is greatly diminished; in that circumstance it is not uncommon for a bidder to think in terms of “What will it take to get the property?” in relation to “How much am I willing to risk?” The winning bidder knows he will leave money on the table - that is how he gets to be the winner.

The question for all us bright evaluators is, “Is it FMV or is it something else?” Does a bidding process elicit values that exceed the value that would be placed on a property in the open market? If so, what do we do with the difference?

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Return-of-Investment

Parts of the following are taken from SPE 71426 “Discount Rates From Market Sales vs. Cost-of-Capital: From Whence Cometh the Difference?” which was presented at the SPE Annual Technical Conference in New Orleans on October 3, 2001. A copy of the paper is available on request.

Several of our newsletters have discussed the use of the Weighted Average Cost of Capital (WACC) as a source for a property specific discount rate. Those reports have also pointed

out that the application of the WACC to the valuation of producing properties is imperfect unless the user accounts for several differences between the WACC and actual market data. These differences can be grouped as the risk associated with:

- Diversity of Income Sources
- Liquidity
- Return-of-Investment

The Return-of-Investment issue has been bandied about for some time and has been the subject of spirited debate in some quarters. Return-of and Return-on-Investment are hot topics in real estate appraisal with entire book and manual sections devoted to both. So far, the debate has not attracted much attention in oil and gas circles - at least not in any obvious way. When the issue does rear its head, the argument normally centers around whether a WACC rate must be amended to account for Return-of-Investment. When WACC is being used as the foundation for a property specific discount rate the outcome of the argument can have a significant impact on the discount rate and the estimate of property value. In this review, we offer a theoretical and an empirical solution to this problem.

Recognizing, as we all do, that oil properties are real estate, it is appropriate that we start with the real estate appraisal view. According to the Appraisal of Real Estate;¹

“The notion that an investor anticipates realizing a complete recovery of invested capital plus a payment for the use of capital prevails in the real estate market just as it does in other markets. The term return of capital refers to the recovery of invested capital; the term return on capital refers to the additional amount received as compensation for use of the investor’s capital until it is recaptured. Investors are concerned with both return of capital and return on capital.

In real estate investments, capital may be recaptured in many ways... Investment capital may be recaptured through annual income or it may be recaptured all or in part through resale of the property at the termination of the investment. If the property value does not change between the time of the initial investment and the time the property is sold, the investor can recapture all the capital invested at its sale. Thus, the annual income can all be attributed to the return on capital. In this case, the indicated income rate - i.e. the overall capitalization rate - will equal the return on capital.

If, on the other hand, the property value is expected to decrease over time and the investor does not expect to recapture all of the original investment at the time of resale, some of the income stream must be used for the repayment of capital. In this case, the rate of return on capital will be somewhat less than the indicated income rate (i.e. the overall capitalization rate in

direct capitalization). The difference between the rate of return on capital and the indicated capitalization rate will be the rate of return of capital. The recapture rate is considered positive.”

The same requirement is found in ad valorem tax appraisal.²

“An investor’s expected return must include both an economic reward and a recovery of invested capital. The economic reward is the return on capital, which is the amount an investor receives for the use of his or her capital until it is recovered. The return on capital is also referred to as the investment yield.

Depending on the capitalization technique, capital recovery may be accomplished in several ways (e.g. straight-line, sinking fund and level annuity capital recovery and recovery all or in part from the value of the property at the end of the income projection period).”

Oil properties are, of course, depleting properties and although changes in technology and/or economics can arrest depletion and extend the productive life of a property, the point is eventually reached where economic production ceases. A depleted property has no value, therefore, recovery of the initial investment at the end of the life is not possible.

Discount rates derived from actual sales are total returns that include both Return-of-and Return-on-Investment. Returns derived from Cost-of-Capital measure only Return-on-Investment. The difference between the two is significant. As shown in Exhibit 1, the difference between the derived discount rates for 100% PDP transactions and the WACC calculated for the 1990-1999 period indicates that while the annual differences vary, the sales derived rate always exceeds the WACC rate.

Payout as a form of Return-of-Investment

Surveys of oil and gas companies and a review of acquisition evaluations suggest that Payout remains a useful, if subordinate, investment criteria. The Payout approach simply determines the time required to recover the original investment from the anticipated cash flow of the project or property. Payout provides for the Return-of-Investment by estimating the time necessary to accumulate the original investment from cash flow. In common industry practice, Payout is calculated as the accumulation of all cash flow from the start of receipt of income until the original investment is recovered. Depending on economic and other conditions, an acceptable Payout might be 3 to 5 years. The shorter, the better. If the Payout were 5 years, then one could infer an average annual Return-of-Investment of 20% for those five years. All income received after Payout

¹ “The Appraisal of Real Estate,” Eleventh Edition, The Appraisal Institute, Chicago, IL 1996, pg. 457.

² Assessors’ Handbook Section 502, “Advanced Appraisal,” California State Board of Equalization, Sacramento, December, 1998, pg. 62

contributes to Return-on-Investment.

In real estate evaluation, property acquisitions are commonly mortgaged for a term that may approach the useful life of the property. If an oil property with an expected life of 25 years is acquired, the same approach could be used to estimate Return-on-Investment. If Payout is calculated as a percentage share of total expected cash flow over the life of the property, then some measure of Return-of-Investment is obtained. Over a 25-year life, the average annual return could be 4% rather than 20%, but Payout or Return-of-Investment is achieved. This is a very simple approach. There are relatively complex calculation methods in real estate appraisal which can be used to calculate the Return-of-Investment by treating it as payment of mortgage principal. Even using our simple approach, we could say that part of the difference between the cost-of-capital and market discount rates is the Return-of-Investment equivalent to scheduling Payout over the economic life rather than the first few years of production.

Why is Adjustment of WACC Necessary?

A common source of argument among appraisers regarding the Return-of and Return-on-Investment issue stems from two differing views of the generally accepted appraisal practice - whether stated by real estate texts or assessment manuals - that the discount rate to be used for reducing income streams to present value includes a component for both Return-of and Return-on-Investment. One way to read or observe this requirement, which we will call the *Two-Rate View* is, to say that the discount rate must be constructed so as to include both elements. That is, when selecting a discount rate for use in an appraisal, the evaluator must insure that both components are part-of or considered-in the discount rate. The other view is that any discount rate, regardless of source, already includes both returns, because is to supposed to, it does. We will call this the *One-Rate View*. Appraisers using the latter approach would attempt to apply WACC rates directly to oil property income streams, insisting that both Return-of and Return-on-Investment are obtained from the income stream. The distinction between the two views is beguilingly subtle and requires some careful consideration. The difference in the two views and the rationale for adjustment of the WACC can be shown (Exhibit 2) by a series of examples.

Example A shows a One-Rate View calculation using a 15% discount rate. The example assumes a uniform annual income of \$100,000 per year for 5 years. Discounting this income stream at 15% indicates a Present Value of \$335,216. Assume that this amount is invested to obtain the income stream. If the example is treated as the amortization of a loan of \$335,216 at 15%, it is very clear that the investor can receive an interest payment (Return-on-Investment) and a Return-of-Investment (Capital Recovery), where the latter totals \$335,216. It is instructive to note that the resulting average annual Return-on-Investment is not 15% but 9.83%.

This example is often used to attempt to illustrate the One-Rate View of discount rates. It is true as far as it goes, but it does not honestly address the issue. The example is correct only if the discount rate is taken from a source that is similar to the intended application. If the intended application is a variable income stream from a wasting asset, a discount rate that is appropriate to a property with fixed income and reversion of investment would give a false answer.

The issue comes into play when the discount rate for an oil property appraisal is taken from a dis-similar source such as the WACC. The WACC is, by definition and construction, only an interest rate - it provides only Return-on-Investment. This is shown by the primary components. Cost of Debt is the interest rate or Yield to Maturity on outstanding debt. It does not include principal repayment. When a lender grants a loan, the interest rate to be paid is assigned on the assumption that the loan principal will be repaid, either over the term of the loan or at maturity. The same is true of corporate bond issues. Returns on stock investments are composed of future dividend payments plus anticipated growth in value (share price). Cost of Equity is calculated, using CAPM or by related methods, as a forward expected rate-of-return on an equity investment. Both the CAPM and the Fama-French model calculate the additional risk-related interest rate required over and above a safe rate of interest necessary to attract funds to higher risk equity investments.

Both the debt return and the equity return assume that the principal can be recovered by redemption of the bonds (debt) or sale of the stock (equity). The WACC model (a) assumes that the investment is held for the long term and (b) treats the anticipated income as a perpetuity. A perpetuity presumes that the investor earns the same amount of income year after year or, on average, over time.

In real estate (oil and gas) appraisal terms, the WACC treats the income stream received by the investor as a perpetuity and assumes that recovery of the original investment occurs as a 100% *Reversion* at some time in the future. The income from oil and gas properties is rarely, if ever, a constant stream in a uniform annual amount; income from oil properties is variable, but typically declines over time. In the case of highly liquid stocks and bonds, Reversion can occur at any time chosen by the investor. However, oil properties are depleting assets that have no Reversion value at the end of the life of the property. (Quite the opposite - most incur large regulatory liabilities). Both issues can be illustrated by continuing our series of examples.

Let us assume, that a knowledgeable and informed person, whom we will call Charlie, is a long-haul truck driver; he has been riding an 18-wheeler all his working life. He has also been an investor in stocks and bonds for many years. Charlie currently has \$1 million invested in a mix of AA-rated Corporate Bonds and Blue-Chip Industrial stocks earning 15% per year. He has become accustomed to a 15% return on his investments. Charlie plans to retire in 10 years, at which time he will redeem

the bonds and sell the stocks, recover his original investment and then, new gold watch in his pocket, "...he'll buy a Winnebago and go off to find America - Do a lot of catching up, a little at a time."³

If we look at *Example B*, we see that Charlie's investment provides annual income of \$150,000, which is 15% per year on his \$1 million investment. (For simplicity, we have assumed no re-investment). Over the next 10 years he will receive total income of \$1,500,000 plus a reversion amount of \$1 million, at the end of Year 10, for a total of \$2.5 million.

Now let's examine *Example C* where the investment has no redemption or reversion value. The original investment still provides \$150,000 per year, but now Charlie must use part of that income to recover his original investment at \$100,000 per year. This leaves only \$50,000 per year, or 5% as Return-on-Investment. Clearly, Charlie will not be able to retire as comfortably as he planned since he is now receiving only one-third the Return-on-Investment that he expected. Scratch the Winnebago; now we are talking *camper shell*.

Now assume (*Example D*) that Charlie has a severe lapse of common sense and decides to get out of the Stock Market and invest in oil production instead.⁴ He knows that oil properties have no reversion value but he still wants a 15% Return-on-Investment. By coincidence, the income from the property is still \$150,000 per year. In order to obtain a 15% return and recover his investment out of the annual cash flow, Charlie cannot invest \$1 million. The largest investment that Charlie can make (the maximum purchase price) is \$600,000. This amount is recovered out of the \$150,000/year at \$60,000 per year over ten years. The remaining "Free Income" of \$90,000 per year provides an average annual return of 15%. The total return (ROI + ROI) is equal to a discount rate of 24.923%. Bring back the Winnebago!

Instead of the *Example D* case, let us assume (*Example E*) that Charlie, after retaining a reputable consultant, buys a real oil property where production and income are projected to decline at 5% per year. In this case, in order to obtain repayment of his investment and also obtain a 15% return on investment, Charlie can only pay a maximum of \$481,500 which is equivalent to a discount rate of 28.624% applied to the Income stream.

In these examples, it is the source of the discount rate that is the paramount concern, not the construction of the cash flow. In Examples D and E, the discount rates of 24.923% and

28.624% represent the total yield rate as would be obtained from actual sales, which recognize the need to recover both Return-of-Investment and Return-on-Investment. The WACC derived rate, with its presumption of future reversion of investment, must be adjusted to account for the Return-of-Investment.

Real estate appraisal has long since resolved this issue. Three methods, commonly known as the *Ring Method*, the *Inwood Method* and the *Hoskold Method*, are used to solve this problem. The Hoskold approach was developed in the 1880's by a mining engineer to resolve the issue of capital recovery from depleting assets (coal mines) and is appropriate to oil and gas appraisal. The method stipulates that capital recovery occurs at a "safe" interest rate and that this rate is added to the expected earning rate to create a total rate that includes Return-of and Return-on-Investment. As capital is recovered from the income stream, the funds are reinvested at a safe rate to accumulate to the recovery of the initial investment.

Using the Hoskold approach, Charlie determines that a safe rate of interest is 7% (Cost of Debt) and calculates a sinking fund factor of 7.238%. This rate is added to the 15% Return-on-Investment he requires to give a total return of 22.238%. This rate should allow Charlie to recover his investment and earn a 15% annual return on his investment from a declining income stream provided that he reinvests the recovered funds at this 7.24% rate. The only difficulty is using this approach is that all three methods, including Hoskold, assume level income even though the asset is wasting. That is, the tonnage taken from the mine and the income remains the same until depletion. Oil properties, of course, have declining production and income streams that would require a larger or variable sinking fund factor. This latter point may account for the difference between the 22.238% and the 28.624% derived rate. The important concept here is that the market sales derived rate includes the return-of-capital component but WACC derived rates do not. The WACC rate must therefore be adjusted to be compatible with the market derived rates.

A Few Personal Thoughts

September 11, 2001 will be, for all of us, one of those days that are permanently burned into our individual and collective memory and which we will recall with absolute, and in this case, brutal, clarity for the rest of our lives. We have had others - where were you when Pearl Harbor was bombed? or Roosevelt died? For those of my generation it was, "Where were you when you heard President Kennedy was shot." As traumatic as those and other events were for Americans, this was different. Not just in the number of casualties and the destruction but in the manner of assault. And it was on television. Here we were just getting ready to go to work and had the TV on and saw it live. Even if, in going about our "normal" lives, we might have our minds on something else this event will not pass soon. The daily pictures of the clean up effort alone will be a reminder.

³ "Eighteen Wheels and a Dozen Roses," Kathy Mattea, Polygram Records, 1987.

⁴ Yeah, I know, but this example was worked up two years ago - the point is still valid.

It is difficult to put into words the mix of thoughts and feelings about such an event - there are too many. But there is clearly a new sense of purpose in the air. The trivialities and frivolous rhetoric that pervaded government, business and much of our daily lives is maybe not gone but at least pushed back in the corner while we take care of what needs to be done. One aspect of that attitude seems to be captured in an article that I found in the WSJ of September 21, 2001.

Strictly Speaking
Wall Street Journal, September 21, 2001, pg. W13

“Of all the terrible blessings that have arisen from the ashes of lower Manhattan, surely the most encouraging has to be a new-found willingness to call things by their rightful names. Gone is talk of “militants” and “extremists”; the men who fly civilian air liners into skyscrapers are just plain “terrorists.” The president speaks of an act of war having been perpetrated on the American people - and acknowledges forthrightly that he did indeed give U.S. armed forces the authority to shoot down civilian aircraft that disregarded instructions to land and appeared to be a threat. The same Mayor Giuliani reviled only a year or so ago as a fascist for calling a dung-splattered Madonna obscene is now lauded for telling New Yorkers that they need to go to their churches and synagogues to pray.

In his masterpiece “Politics and the English language,” George Orwell said that euphemism and slovenliness were endemic to political speech because that is the only way “to name things without calling up mental pictures of them.” The author of “1984” and “Animal Farm” was speaking of the words we use, but it is equally true of symbols. Was it just coincidence that in George W. Bush’s first address from the Oval Office after the tragedy, the part of the presidential flag visible to the American TV audience showed the talon of the American eagle that is gripping arrows? It was Harry Truman, we recall, who changed the presidential seal by turning the eagle’s head so that it faced the other side, where the eagle grips an olive branch.

Today we sense a hunger for the clarity of yesteryear. Mr. Bush uses the word “evil.” The yellow ribbons that cheered us when nothing really threatened us seem somehow cheap in the face of such horror and death. Four years ago Bill Bennett wrote “The Children’s Book of Heroes” to rescue a term thought passé; now, with countless acts of grace and courage paraded across our TV screens hourly, “hero” almost seems inadequate. Come to think of it, looking at the names of the hundreds of fathers and husbands who gave their lives while saving others, we wonder whether people must remain embarrassed for saying “fireman” in place of “firefighter” which the gender police have forced into our children’s books and language.

The point is that there are consequences to language and imagery designed to obscure. In the aftermath of World War II,

a newly built Pentagon lost the name it had since 1787: the War Department. It became Defense, and only a few years later a war on the Korean peninsula that took 36,000 American lives would be officially labeled a “police action.” Still later, in Hanoi, our captive soldiers, sailors, airmen and Marines were denied their Geneva Convention rights and taunted as “bandits” and “war criminals” on the grounds that America had not issued a declaration of war.

Only days after the attacks it leaked out that Mr. Bush, who has been accused of some pretty fuzzy language himself, privately told four senators that when he did decide to take action, he wasn’t “going to fire a \$2 million missile at a \$10 empty tent and hit a camel in the butt. It’s going to be decisive.” It’s not Churchill, but it’s clear. And even Osama bin Laden will appreciate the metaphor.”

Publications

“Statistical Analysis of California Oil and Gas Property Transactions.” Richard J. Miller & Associates, Inc. Sept. 2001.

This volume is published as a supplement to the Property Sales studies done by this firm for the Western States Petroleum Association (WSPA) since 1985. It is a compilation of all previous statistical analysis plus the results of new work done in 1999 and 2001. Emphasis is on defining the relationship, or lack thereof, of the discount rate to the various components of an evaluation and/or the characteristics of both the property and the source transaction. The analysis tested 22 different parameters and found that only the percentage of PDP reserves and the Weighted Average Cost-of-Capital display any significant relation to discount rate.

The publication date is September 28, 2001. Copies of the study are available for \$10.00 postage and handling.

The California Division of Oil and Gas (DOG) has come out with two very useful publications on CD. Actually the content is not new but the format is worth noting. The DOG has a well earned reputation for providing reliable information for producers and others who are interested in California oil and gas operations. For many years, starting in 1915, the DOG published the semi-annual **Summary of Operations** which included production data for the state but also included field studies which covered the geology, development history and other information about specific fields. These studies were very detailed with full size maps and cross-sections. In time, these reports acquired the status of authoritative sources and many are true collectors items. I was fortunate to be given an entire set when one of my early mentors retired. The DOG has now put out all the Summary of Operations reports from 1915 to 1999 on CD in PDF format for \$50.00. True Oldies but Goodies.

DOG is also offering Volumes I-III of **California Oil and Gas Fields** on CD in PDF format. Originally published in loose-leaf binders, these books consist of one or more 8"x11" maps and cross-sections for each field or field area plus some data about each field. Available from DOG for \$25.00. Call (916) 445-9686 for ordering information or check the DOG website at www.consrv.ca.gov/dog.

“Decisions Under Uncertainty: Drilling Decisions by Oil and Gas Operators,” by C. Jackson Grayson, Harvard University Press, 1960.

I have been revisiting this wonderful old classic that is the starting point for most of the risk analysis theory that we apply to oil and gas evaluation today. I first read it at a wide spot in the Rio Grande valley way back in 1966. I have run across copies since then but never had my own copy. I found one - several actually - on Alibris.com at something more than the original \$6.00 price. The interesting thing is that it reads as well today as it did 40 years ago. I found a footnote on page 149 which states:

“Profit-to-investment is the ratio of the total ultimate return from an investment to the investment.”

A Time for Standards

“Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserve Information.” Society of Petroleum Engineers, Dallas, TX.

In June, 2001 SPE authorized the publication of an update to the “Standards” first published in 1977. The stated reason for the update is to make the Standards compatible with the 1997 reserve definitions. That is a good reason. I have not done a detailed review to see what other changes have occurred

The need for the Standards is stated on page 2:

“...although some users of Reserve Information are cognizant of the general principles that are applied to databases in determining Reserve Information, the judgments required in estimating and auditing Reserve Information and the inherently imprecise nature of Reserve Information, it has become increasingly apparent in recent years that many users of Reserve Information do not fully understand such matters. The adoption, publication and distribution of these Standards should enable users of Reserve Information to understand these matters more fully and therefore avoid placing undue reliance on Reserve Information.”

To my knowledge, the Standards update was done without fanfare. That is too bad. What good are 20 pages of Standards if all you do is update them every 25 years and then leave them on the shelf to gather dust? Should not SPE or some other interested organization be promoting the use of and adherence to such Standards? Perhaps there is the opportunity for a useful juncture between the SPEE REP endeavor and the promulgation of the Standards. Just a Thought.

