

APPRAISING OIL & GAS PROPERTIES

A Newsletter for Appraisal Professionals

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Here in California, aside from the stock market going south (which reduces the need for all that tedious estate planning), things are not so bad; oil and natural gas prices are at historically lofty levels and the politicians are so busy playing around with the electricity "crisis" they have not had time to find other ways to harass the citizenry. We have been taking advantage of a relaxed work schedule to catch up on some deferred client work, opining on selected ongoing legal issues, doing some web surfing and thinking about designing our very own Website - "Opinions R'Us.com" has a nice ring to it.

Squirrels, Otters and other Critters

Snowfall at the cabin this winter is above normal, 4 ft. deep in places, and for a while there was a modest glacier forming at the top of the driveway. Mind you, we need the water and if it had snowed more that would be okay too. But, the white stuff does put a crimp in the outdoor work plans. The summer painting season is still months away. What to do? We do not have TV, the mountains block all channels. We could get cable but a cabin is supposed to conjure up images of "roughing it" and selective deprivation. Other outlets for entertainment include bird watching, of a sort. For many years we have had one or more bird feeders hanging in the trees outside the kitchen-dining room window. We also put a bucket of sunflower seeds out on the deck. This free lunch routine attracts all sorts of winged critters including bluejays (Mountain and Scrub), chickadees, and others. Most are permanent residents but, during the Spring and Fall, we get the odd transient species on their way to wherever. We also have the local variety of peckers-de-wood but that is another story.

In addition to the birds, we also have chipmunks (see July, 1997 newsletter) and gray squirrels. The squirrels are not new - they have been around for years and have generally been well behaved, restricting themselves to naturally occurring squirrel food - pine cones, etc. Of course, Madam and I have seen and heard all the stories about squirrels vs. bird-feeders. I even bought a book entitled "Outwitting Squirrels" just in case, but they have not been a problem. Until this winter. Maybe they are just slow, but after a lot of years they have finally caught on to the Weekend Rescue Mission and are making up for lost time. As soon as I fill the bird feeders herds of the little varmints come over the roof and proceed to get into everything I put out. You would not believe me without a video but the acrobatics are amazing. They have literally dismantled one rather nice cedar feeder; opened or chewed through plastic jugs and buckets; and generally made life difficult for the intended recipients. As far as the birds are concerned it is the equivalent of having the former First Family move in next door. There have been Bluejay protest marches but to no avail.

In an effort to resolve this problem we decided to get a squirrel feeder with the idea of putting it at some distance - the next county - away from the birds. We ordered it on-line. It is quite sturdy, all steel and painted a nice green to match the (newly painted) trim - a truly great contraption. The next weekend, full of expectation, we loaded up the truck with the feeder and a bunch of peanuts - some for me, some for the squirrels. Bright and early Saturday morning we opened for business. I set up the squirrel feeder on the deck and filled it with peanuts. Then I put a small pile of peanuts in front of the feeder so the squirrels would get the idea and want to get inside for more. I could then move the feeder and peanuts elsewhere. With luck the squirrels would follow. Wrong! First of all the squirrels slept-in. Then Bluejays discovered the peanuts and for the next 20 minutes the deck had about as much woodland serenity as a soccer riot. The pile was gone. When the squirrels showed up they went straight to the bird food and, while they did investigate the new green thing on the deck, it required opening the lid. Scary! The bird food was easier. The Bluejays, however, spent most of the day alternately trying to break into the squirrel feeder and glaring in the window to demand more peanuts. We are moving on to Plan B.

In other news, the Sea Otters appear to be gaining the upper hand on the Fish & Wildlife folks. As reported in our Nov. 2000 newsletter Sea Otters, an endangered species, have made such a strong comeback on the California coast north of Santa Barbara that they have been moving outside their assigned territory and upsetting shellfish fishermen (or is it shellfishermen?). Anyway, this past December a group of fishermen filed suit against the otters (actually the U.S. Government) in federal court to require the Feds to "...enforce the no-otter zone..." that was established in 1987 south of Point Conception. The otters have hired an attorney, a local, who is, I suppose, being paid in abalone shells, to argue their side. I have this image of a Pelican in a bowler hat carrying a briefcase. Stay tuned, but I think the otters are ahead on both legal grounds and in making the other side look foolish.

Science and Not-So-Science

So much for the entertainment. There are other areas to delve into. Science for instance. Science is not only useful, but it can be fun. Science is about finding things out. True, some science is more fun than other science. I always found Physics intriguing. Simple laws with practical applications. Many of us learned basic physics at an early age through experience. "*A body in motion tends to remain in motion.*" explains why a person riding downhill in a Radio Flyer should not attempt to stop by dragging his/her feet. I left a lot of skin on Crane Avenue before I learned that one.

Science in all disciplines is moving far faster than any of us can fully grasp and, contrary to the flat-earthers, Luddites and Ralph Nader, the benefits far outweigh the potential hazards. The February 16th issue of Science magazine was devoted entirely to human genome research and included a 4'x6' chart of the human genome, the whole thing, suitable for framing. The benefits to be derived from this work have already started with identification of genes that control diseases and other human functions. At the same time, NASA, previously 0 for 2 on Mars, managed to land a spacecraft on an asteroid; evidence for water has been found on Mars; a new human progenitor has been unearthed in Kenya; and a reasonably rational explanation for the Medieval Warming Period (Vikings in Greenland et al) has been developed that does not involve industrial sources of greenhouse gases. Something about fluctuating density of ocean water in the North Atlantic.

Of course, science can be both exploited and ignored, as in the Great Global-Warming Hoo Ha. Consider the recent flap about George W's supposed campaign promise to regulate CO₂. In a speech that was poorly edited, Mr. Bush lumped carbon dioxide in with sulfur dioxide and other noxious stuff that should be regulated. Greenies saw that as a chance to shut down coal-fired power plants and new EPA chief Christie Whitman (who should have known better) started talking about EPA regulation of CO₂ as a pollutant. Oops!

Of course, coal-fired power plants are not the only sources of CO₂ - there is thee and me - mostly thee. Imagine this. Ten years from now, EPA Regulation CO₂900001-C, which can only be read during daylight because there are no more operating power plants, requires that in order to reduce future possible, could-be, someday global-warming due to CO₂ buildup, Americans will henceforth only be allowed to exhale X lbs of CO₂ per day. The amount of permitted exhalent will be reduced during high CO₂ days. Anyone who exceeds his/her limit for the day must stop exhaling CO₂ until the next solar cycle begins or until EPA says it is OK. As a market incentive, those permitted sources of CO₂ who do not exceed their quota of permitted exhalent for the day may sell any unused exhalation rights to anyone who is blue in the face.

But so-called Global Warming is nothing compared to the newest major crisis brewing for old Mother Earth. It seems that portions of some continents are rising while other areas are

being depressed (geologically, that is). Geophysicists have determined that super-plumes of hot, buoyant rock emerging from the outer surface of the earth's core expand upward through the mantle, and in doing so, lift the material above. If that material happens to be part of a continent, such as southern Africa and/or parts of Australia, the continent is uplifted. Conversely, other areas of continental crust may be dragged down as pieces of old, higher density subducted plates fall through the mantle. Kind of neat. Like a Lava Lamp on steroids. Science is cool. But these bobbing continents could be a problem. What if New Jersey suddenly jumped up 100 ft? What if it tilted instead of going up straight? This could be serious. Solving this latest crisis will certainly require some new laws and regulations, a UN conference or two and, of course, a tax on whomever who can be found to be blamed for it.

Conventional Wisdom

All the grand things going on in biology, anthropology, geophysics etc, make oil property appraisal seem pretty mundane if not boring. But that need not be the case. Over the years, I have been involved in numerous debates, in court and otherwise, regarding oil property values in which evaluators were inventing new methods, practices and data almost daily. But, even when those sources fail to provide fodder for spirited discussion, there is always one of my favorite areas for intellectual spelunking - *Conventional Wisdom*, as in "*Everybody knows,*" "*That's the way we always go,*" and "*If you sail too far, you will meet dragons or fall off the edge of the Earth.*" The references to dragons, et al is attributed to various people in 1492 but fell out of common usage until resurrected by Al Gore in 2000. So, in our Discussion for this issue, we take on one example of the big CW and attempt to unravel the relation of price escalation to discount rates.

The Relation of the Market Value Discount Rate to the Rate of Change of Product Prices.

The relationship, if any, between the discount rate and the rate of escalation of product prices and/or costs, is a common topic of conjecture among oil property appraisers. It is not uncommon for knowledgeable appraisers to suggest that an increase in the oil price escalation rate should be matched by an increase in the discount rate, and conversely, that a reduction in the oil price escalation rate should be coupled with a reduction in the discount rate. Put differently, the argument is occasionally made that evaluations that make use of escalated oil prices should, all other things remaining the same, have higher discount rates than evaluations that do not project an oil price increase. Often left open is the question of whether the discount rate should be increased or reduced by the same amount as the escalation rate. There is often the implicit, but mistaken, assumption that *escalation* is synonymous with an *increase* in price over time.

The relationship, if any, betwixt the escalation rate and the discount rate can be studied by several methods. For simplicity, the following discussion will consider only projected changes in oil price. Further, the term *escalation*, as used in this

discussion, means a price projection that includes any change, increase or decrease, from the initial price; Non-escalated means no change, anytime, or flat. Lastly, only **Nominal** price projections are considered.

If the discount rate were a direct function of the escalation rate; that is, if evaluations that were Non-Escalated had lower discount rates than their Escalated brethren, that relation should show up in the data collected from evaluations of properties. For instance, assume we have data from actual market value transactions. For a representative sample of these sales, (a) the overall Mean and Median discount rate should be lower for Non-Escalated sales than for Escalated cases, and (b) the distribution of discount rates for Non-Escalated sales should be offset and lower on the scale than the distribution of discount rates from Escalated evaluations.

Discount Rate Statistics

For this Discussion, the Western States Petroleum Association (WSPA) Study for 2000 is used as the data source. The data are for the Study includes 222 FMV acquisition evaluations of oil producing properties, of which 126 sales are defined as Escalated and 96 sales are Non-Escalated. The Mean (arithmetic average) discount rate for the Escalated sales is 24.5%, while the Mean for the Non-Escalated sales is 23.6%, a difference of less than 1%. The standard deviations are 7.6 and 6.2 respectively. Other statistical data regarding these transactions is shown in Table 1.

While the Mean for the Escalated sales is higher than for the Non-Escalated sales, as Conventional Wisdom would expect, the difference of less than 1.0% is minor. Given the variety of physical and economic conditions that are present in the evaluations, the closeness of the averages is, at first glance, striking. However, the same variety of economic and other conditions that occur among the sales could be the reason, due to random effects, that the averages come out as close as they do. Removing some of the differences among the sales may help to resolve the issue. The **Risk-Inclusive** database, a sub-set of the WSPA database, contains 143 sales which are known to account for the risk associated with the property as part of the discount rate. Using this smaller database obtains the results shown in Table 2. Removing the Reserves Risk could provide a better view of the issue. Using **100% Proved Developed Producing** sales produces the results shown in Table 3.

The results of analysis of all three data sets suggest that, on a broad basis, there is little or no difference between the discount rates derived from Escalated sales and those derived from Non-Escalated or flat projection transactions. This could be interpreted to suggest that the discount rate is not a function of whether or not the oil price is escalated.

TABLE 1. All Sales

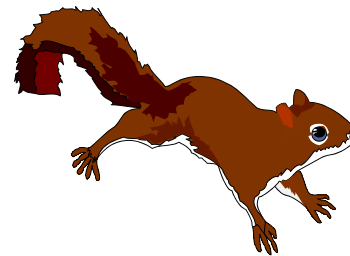
	Escalated	Non-Escalated
Number of Sales	126	96
Mean, %	24.5	23.6
Median, %	22.80	22.55
Standard Deviation	7.6	6.2
Range of 1 SD	16.9 - 32.1	17.3 - 29.8

TABLE 2. Risk-Inclusive

	Escalated	Non-Escalated
Number of Sales	85	58
Mean, %	24.3	23.5
Median, %	22.60	22.55
Standard Deviation	6.5	6.0
Range of 1 SD	17.8-30.8	17.5-29.5

TABLE 3. Proved Producing Only

	Escalated	Non-Escalated
Number of Sales	75	78
Mean, %	23.9	22.8
Median, %	21.7	21.8
Standard Deviation	6.3	5.8
Range of 1 SD	17.6 - 30.7	17.0 - 28.6



Relative Distribution

Another way to look at the data is to compare the relative distribution of discount rates for the Escalated and Non-Escalated groups. According to *Conventional Wisdom*, the discount rate for a Non-Escalated evaluation should be lower than that for an evaluation using an Escalated oil price projection. If that is the case, the distribution of the frequency of a given discount rate for the Non-Escalated sales should be lower on the discount rate scale than the Escalated sales. That is, if the frequency of occurrence of discount rates for Escalated and Non-Escalated evaluations are plotted, the distributions for the two groups might be very similar, but the Non-Escalated distribution should be lower on the scale with the central tendency closer to zero. This is not the case. The graphs shown nearly suggest that, while there is variation in the number of sales within each discount rate range, the overall distribution is very similar for All (222) Sales (Fig. 1), Risk-Inclusive (143) Sales (Fig. 2) and 100% PDP (153) Sales (Fig. 3).

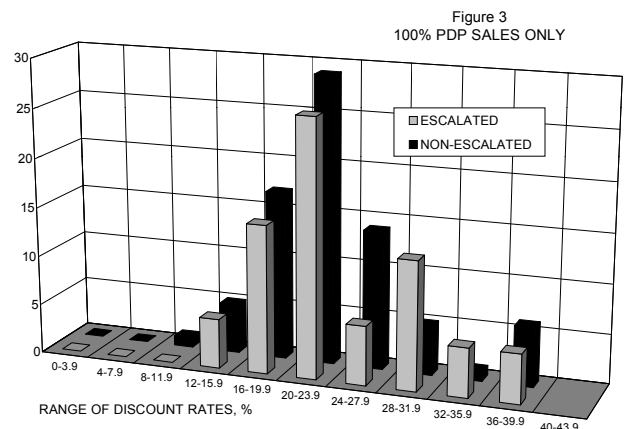
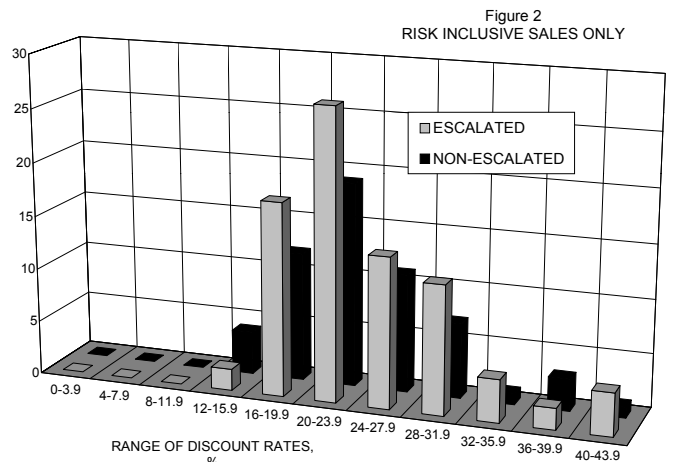
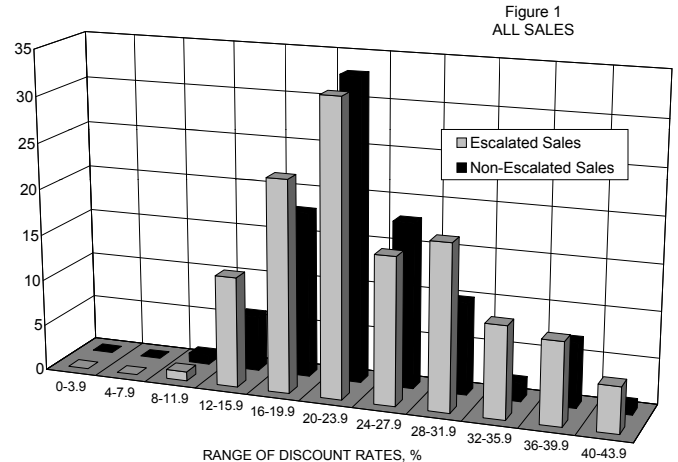
Escalation Indices

One difficulty of using the Mean/Median and/or Relative Distribution is that neither approach measures the relation of discount rate to the rate of escalation. If a relationship were to exist, it might be reasonable to expect that higher discount rates would be associated with higher rates of escalation. The rate of escalation is usually expressed as a percentage of annual increase from one year to the next. In many evaluations, a uniform rate of escalation is used which may be relatively easy to relate to the discount rate. But many other evaluations use escalations that change over time.

In order to work around this problem, the Escalation Index ("Index" or "EscIndex") has been devised. The Index is a ratio of the average oil price in Year *N* to the average oil price in Year 1. A 5-Year and a 10-Year Index are used, which measure the change in price over the first 5 years and first 10 years, of each evaluation. The larger the Index for an evaluation, the greater the rate of change. An Index of 1.00 indicates no change in price over the time period. An Index of 2.00 indicates that the price would double in the period. The Indices for each sale in a group of sales can be compared to the discount rates for the same group of sales using statistical methods.

Correlation Analysis

Correlation analysis has been used to test the relation between discount rate and oil price Indices. The 1995 WSPA study found Coefficients of Determination (R^2) of 0.01992 and 0.02088 (which is essentially no relation) for the 5-Year and 10-Year Indexes using all sales. The 1997 WSPA Study found even lower R^2 values for a slightly larger data set.



The 2000 WSPA Study extended the work done in prior years by (a) testing two groups of sales: Group 1 includes all sales with Index greater than 1.00 and Group 2 which includes only those sales with Index greater than 1.00 but less than 2.00, and (b) going beyond linear regression to include non-linear methods. The non-linear tests found that, using Group 2, R^2 for EscIndex10 could be increased to greater than 0.100 if higher order (3rd, 4th, 6th) polynomial equations, which found R^2 of 0.1141, 0.1473 and 0.1629 respectively, were used. These are fairly good correlations when compared to the R^2 for linear and other relations but are still statistically insignificant. The improvement in R^2 results, from removal of the high rate escalations above Index = 2.00. This leaves a more cohesive data set that still has an upper end of 20% per year increase in price. The improved correlation obtained using EscIndex10 may reflect the risk effects of longer-term reserves or production life more than any effect of price increase. However, the improved R^2 is only achieved through a highly tortuous curve fit that suggests that discount rate should be above 30% when EscIndex10 = 1.200 or 2.000, but would be only 23% for EscIndex10 = 1.600. This is not a very rational result for use in appraisal.

It is also of interest to note that for all the linear, logarithmic and exponential correlations, the relationship is consistently negative or inverse; that is, the discount rate declines as Index5 and Index10 increase. This is not particularly encouraging for the original hypothesis, which holds there is a direct relation and that the higher the rate of escalation, the higher the discount rate would be. The available data suggest that this is not true.

Why Would You Do That?

Another approach to this issue is to ask this loaded question, ***“Why would the discount rate need to be changed to account for price escalation in the cash flow?”***

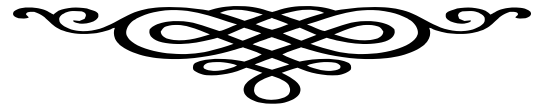
The usual response is that the Escalated price projection has more Risk than a Non-Escalated projection therefore the Price Risk should be included in the discount rate. But what is “Price Risk” and how is it measured? One of the few certainties about oil property appraisal is that the oil price projection will be wrong. I know there are a lot of very smart people who spend enormous amounts of time trying to predict oil prices and have very good reasons for their conclusions. But oil price is not a production projection or calculation of oil-in-place that can be estimated based on physical properties. Oil is a commodity that is subject to not only market conditions that vary considerably, but also to political and other non-market conditions that are not predictable.

I suspect that the real issue is a confusion about Real and Nominal pricing and the relation of projections of same to discount rates. Price projections and discount rates can be either Real or Nominal but, in a specific appraisal, must be one or the other. If the price projection includes inflation then so must the discount rate and vice versa. The problem here is that oil price escalation is not caused by inflation. Changes in oil price may

contribute to inflation at the wholesale and consumer level, however, the existence of inflation in a market economy does not necessarily cause oil prices to change. It is perfectly plausible that the discount rate could include an inflation component while the oil price projection does not. This means that a Nominal price projection can be flat or even declining.

Conclusion

Analysis of actual transactions seems to show that the discount rate is not related to and is not a function of (a) the incidence of and/or, (b) the rate of projected change in oil price used by the evaluator of that property. Further, there is no apparent reason that they should be related except in a Real/Nominal sense. Rather than increasing or decreasing the discount rate to account for future projected changes in oil price, the appraiser should focus on the return required for the property risk perceived and modify the purchase price he is willing to pay for the property.



The Influence of Politics on Appraisal

Since I started writing this newsletter in 1993, we have made a studied effort to include only serious discussion of appraisal issues regarding oil and gas property evaluation. While we have occasionally taken sidetracks which included political observations these have tended to have a somewhat lighter tone than the otherwise learned dialogue. There is, of course, a connection between appraisal of oil properties and topical politics - particularly when the politics becomes translated into laws and regulations that effect property value.

Among the several excellent Cabinet and other major appointments made by (Yippee!) President George W. Bush, one of the most interesting is the new Interior Secretary, Ms. Gayle Norton. Someone once said that you could judge a person or an idea by those who take exception. If all the liberal indignation and media huffing is any guide, Ms. Norton could have a very important impact on our business. In reading about Ms. Norton, one item caught my attention. She is apparently a big fan (as am I) of Richard A. Epstein, a prolific legal writer and currently head of the U. of Chicago Law School. Mr. Epstein postulates the revolutionary idea that if Government takes your property, either outright or by impeding its use, then Government should pay for it. This is not such a new idea. The first Congress of the U.S. made it part of the Fifth Amendment to the Constitution: *“...nor shall private property be taken for public use without just compensation.”*

One of Mr. Epstein's books (see References) is a tour de force on the issue of Regulatory Takings. These are limitations on the use of property brought about by Government regulations. Mr. Epstein argues that restricting a property owner from using or developing a portion of his land because an "endangered species" lives there is no different than carving off that piece of property to build a road; the owner should be compensated for the loss of that property.

Regulations, from zoning laws to the Endangered Species Act, create Takings of property that should engender the Constitutional necessity for Compensation. But, for the most part, restrictive regulations have been exploited to confiscate property rather than to serve the "public good" for which they were enacted. Some of the most egregious applications of these regulations have not been initiated by Government agencies but by private special interest groups attempting to delay or eliminate land development, irrespective of any loss of value to either the landowner or the larger public interest.

The usual tactic is to find a certain flora or fauna on the site and then sue to have that organism declared "endangered". Ms. Norton's experience as Attorney General of Colorado suggests a more rational approach to public land use than the absolutist dictates of the last 8 years. While I fully expect to be disappointed, such a change in attitude would be helpful if only to give pause to the single-issue groups who are in the habit of thinking that the Federal Government is in their pocket. The effect of this change is hard to predict but Interior is already reviewing last-minute Clinton regulations which created new monument lands, roadless areas and restricted federal land use.

What is a Lease Worth?

On this subject, a recent (2/5/01) O&GJ article noted that Coastal Petroleum Co., in Apalachicola, FL, has sued the State of Florida for compensation for a 60-year-old state lease in the Gulf, which the company claims it could not develop because it was denied a drilling permit. The company is asking for the fair market value of the property as damages. Coastal President Philip Ware said, "The state wants it both ways. The state is refusing to allow Coastal Petroleum to exercise its legal right to explore for oil and gas under the leases the state sold to us. At same time, the state is refusing to compensate us for taking away our property rights." Without getting into the details of the suit, which has been up and down the FL court system that we now know so well, consider this appraisal question:

What is the value of an exclusive right to drill on a state (or Federal) lease where development is denied?

Here is a hint: Mobil Oil Exploration & Producing Southeast, Inc. v. United States; No. 99-244, decided June 26, 2000 (www.supremecourtus.gov.) Change the locale to CA offshore or any other place where development is denied. Appraisal does not have to be dull!

California Dreamin' or Like, Hey Dude, the Lights Went Out!

Speaking of California and Energy - reports of the demise of the Golden State are premature - we are not in the tank yet. But then, the folks in Sacramento are not through "fixing" the problem yet, so anything can happen. Social stereotypes aside, the fact is that California is the 6th or 7th largest economy in the world with a basically sound and functional state Government overseen by a gaggle of politicians that make the Queen's Court in Alice in Wonderland seem like a model of sanity. A bit strong perhaps but a premise from which to start.

The energy issue here is being played out like one of those silent Western movies complete with bad guys (out-of-state generators), on-rushing train (utility collapse and high consumer prices), schoolmarm (pick your victim) tied to the tracks, and, of course, the Hero (No, not Randolph Scott or Lash LaRue - too bad!) played by none other than our very own Governor Gray Davis ("GOV"). You can almost hear the sod-busters cheering now. [For those of you who have not been exposed to Mr. Davis, picture Al Gore without the charisma and spontaneous humor]. Anyway, instead of fixing the problem with a market solution, whereby consumers would pay the real cost of electricity which might induce conservation, the GOV has so far committed several billion dollars for long-term power purchase agreements and buying the transmission system, which will, of course be paid for by the very same consumers in the form of taxes, which will, of course, have to be raised because the above is being paid for with (tax) revenue bonds. So, in the end, instead of deregulating electricity in CA, the State will become my electric utility, which is what the GOV wants to do anyway. Once again, GOVERNMENT takes advantage of a problem to create a taxing opportunity. (Apologies to Mel Brooks).

The California energy debacle is a good example of how politics can effect value. While the immediate concern is electric power, the real issues are natural gas and political interference in the market place. First, it should be understood that everyone concerned, from former Governor Pete Wilson to PG&E; from so-called consumer advocates to the current governor and state politicians, had a hand in creating this mess. Second, the idea of deregulation was, and still is, a good one but the plan put in place in 1996 had too many strings attached and depended on too many projections which did not consider significant changes in such things as supply, demand, and natural gas prices. The result was that a confluence of events, the "Perfect Storm" effect, brought the whole thing to a screeching halt with rolling blackouts, bankrupt utilities, and everyone pointing fingers at everyone else.

The Plan

The plan was that electricity would be deregulated by (1) taking investor-owned utilities (PG&E, SoCalEd and San Diego G&E) out of the generation business, (2) having them sell their plants to third-party "generators," (3) obtaining lower prices by encouraging competition among the "generators" who would either buy the old plants and/or build new ones, and (4) allowing consumers to pick their power supplier. Meanwhile, the utilities would be allowed to recover the sunk costs of existing, (primarily

nuclear) plants by means of an assured minimum rate for distributing the power which they would buy from the generators for those customers who did not switch. No one was ecstatic over this, but it was a plan and it looked good in 1996. The problem is that (1) consumers did not stampede to sign up with new supplier (after all, we already knew where to mail the payment), (2) no new plants were built thanks to siting restrictions and NIMBYism; (3) demand kept increasing - particularly up North in the Silicon Valley area and (4) air quality and other regs shut down some plants and caused gas to be the only acceptable fuel for the rest.

Now, it is probably fair to say that there were staffers at the PUC and other places who saw the dam about to burst and said so, but apparently no one paid attention. The first real crack in the system showed up when SDG&E recovered its sunk cost and came out from under the price cap last summer at just about the same time that gas prices were starting to force generation costs up. SDG&E prices went up and you could hear the consumer screams all the way up here - I know because I heard from one of them: Mom lives in San Diego. Electricity rates that were supposed to have gone down went up instead and the politicians in Sacramento tried to put the cork back in by re-regulating prices.

Out in the Oil Patch

What does any of this have to do with appraising oil and gas properties? A lot actually. The oil price and gas price increases that have occurred over the past months here (as elsewhere) are a good-news/bad-news situation, depending on your point of view. After all, Midway-Sunset 13°API at \$21.25 (down from the peak) is a good thing. So is \$6-10/MCF gas, so long as you are selling and not buying.

The conundrum is that out here, as we have noted before, oil is produced the hard way. Getting that Midway-Sunset 13° API or Belridge or Kern River oil out of the ground usually requires a little encouragement in the form of steam, which is produced in field generators or in co-generation plants. Both burn natural gas. There would be no problem if M-S, Belridge or Kern River produced enough gas to meet fuel needs but they have not done that since the Truman administration. So, you have \$22 oil, but you have to buy \$6-\$10 gas to burn to get the oil out of the ground and also to fuel the treaters, separators and other equipment.

Now it gets complicated. In most fields that require steam, and in some that do not, the operators have installed co-generation facilities that burn gas to generate steam and electricity. The steam goes to the field, of course, as do a large portion of the electrons, but the excess electricity is sold into the power grid. (Think Tax Credits and special prices). Unfortunately, the primary power purchasers are PG&E (belly-up) and SoCal Edison (close) who, by all accounts, no longer have two nickels to rub together and have not paid some producers since October or November. This adds an entirely new dimension to operating an oil field. Do you keep buying gas to fuel generators to keep a field operating when the gas price is higher than the oil price was two years ago? If you shut-down the co-gen plant (and many have) what do you do for power to run the pumps, etc? Solar panels and wind mills are not much

help. Do I stop steam injection until conditions change or do I operate at a loss (oil price minus gas cost minus power cost)? You do see the problem! A recent SRO meeting of oil producers, power generators, Government people and others noted that the above combination has resulted in a situation where, even with the highest prices in 10-15 years, many California fields and projects are uneconomic. Think about that. Is it possible that at \$20-25/Bbl oil prices, most of the major oil fields in Kern County are uneconomic and therefore have no market value?

Useful Websites

One of the most useful and functional websites that I have found is operated by a Government agency. The California Division of Oil and Gas, or "The DOG," as it is affectionately known, is the best single source of data about the California oil industry that exists. While budget cutbacks over the years have taken a toll, the DOG continues to find ways to make information available to anyone who might be interested. The DOG collects and catalogues production data; maps; well logs; drilling, completion and workover reports; and compiles field reports for publication. This information has always been available in hard copy and through commercial sources.. The latest effort by the DOG is to make all of its information available on a Website. The main attraction for me is historical production and injection data on virtually every well in CA on a monthly basis back to 1977. Data can be accessed and sorted by field, operator, lease, well, or location and can be viewed and downloaded in tabular and/or graphical format. Tabular data can be exported to an Excel or other spreadsheet. The latest addition is a feature that allows data to be summarized before downloading. True, there is no fancy analysis software on the site but how much talent does it take to construct an Excel graph? The best part is that it is free. www.consrv.ca.gov/dog/

References

(1) **"Fair Market Value Transactions, Cost of Capital and Risk: California Oil and Gas Property Transaction 1983 through 1999;"** January, 2000, prepared for WSPA and CIPA, Richard J. Miller & Associates, Inc. The 2001 WSPA report is currently available from this firm for \$10 postage and handling. A Statistical Volume will be out in the near future.

(2) **“Outwitting Squirrels”** Adler; Bill, Jr. 2nd Edition Chicago Review Press, 1996. Entertaining even if you are not trying to cope with squirrels. Chapter titles include: “Know Your Enemy,” “What to Do if You Think Squirrels are Cute” and “Giving Up.”

(3) Gurms, Michael, **“Sculpting the Earth from the Inside Out”**, Scientific American, March 2001, pg. 40

(4) **“Takings: Private Property and the Power of Eminent Domain,”** Epstein, Richard A., Harvard University Press, 1985

Parting Shots

It seems Slick Willie is finally gone but we could not pass up one more shot.

Senator Hillary Clinton (D-NY) goes to heaven on a fact-finding trip [It's a joke]. As she stood in front of St. Peter at the Pearly Gates she saw a huge wall of clocks behind him. She asked St. Peter. "What are all those clocks?"

St. Peter answered. "Those are Cie-Clocks. Everyone on Earth has a Cie-Clock. Every time you lie the hands on the clock will move."

"Oh," said Hillary. "whose clock is that?"

"That's Mother Teresa's". St. Peter responded. "The hands have never moved indicating that she never told a lie."

"Whose clock is that?," the Senator asked.

"That's Abraham Lincoln's clock. The hands have only moved twice telling us that Abe only told 2 lies in his entire life."

"Where's Bill clock?," Mrs. Clinton inquired.

St. Peter sighed and shook his head. "Bill's clock is in my office. I use it as a ceiling fan."

SPEE Announces Recommended Evaluation Practice Program

The Society of Petroleum Evaluation Engineers (“SPEE”) is a professional organization founded in the 1960's and is comprised of engineers whose predominant work is in the physical land economic evaluation of oil and gas properties and who have demonstrated experience and knowledge of the subject. One of the primary objectives of the SPEE is “... to promote the profession of petroleum evaluation engineering, to foster the spirit of scientific research among its members, and to disseminate facts pertaining to petroleum evaluation engineering among its members and the public.”

SPEE members have long been concerned about the variety of standards that apply to the methods used to evaluate oil and gas properties and to report the results of those evaluations. As a means of reducing this problem and also to achieve the objectives of the Society, SPEE has embarked on a program of developing a set of Recommended Evaluation Practices or REP's. As stated by SPEE, the REP's will identify an evaluation-related issue and discuss the preferred or recommended treatment of that issue. These position papers are not intended to be a set of rules that

preparers of evaluation reports (whether SPEE members or non-members) must follow, but are presented as suggested ways to handle an issue when the preparer of the evaluation report doesn't have an overriding reason to do it some other way. The papers, when formally adopted, will be maintained on the SPEE website where the evaluation community can readily access them.

Four REP's have been drafted and are in the comment stage.

REP #1 is entitled “Recommendations for Reporting Estimated Reserves of Oil and Gas.” It discusses the various elements that should be included in a typical reserve report and the issues that should be addressed.

REP #2 is “Presentation of Hydrocarbon Production, Sales, and Lease Use Quantities in Reserve Reports.” This REP discusses the various ways that quantities are presented.

REP #3 is entitled “Inclusion of Revenue from Non-Hydrocarbon Reserves in Reserve Reports.” Engineers customarily include revenue from a wide variety of sources in reserve reports, a practice that is not in line with SEC intent.

REP #4 is “Inclusion of Hedging Positions in Reserve Reports.” dealing with the issue of how hedges should be treated.

All four REP's can be viewed, downloaded and printed in PDF format from the SPEE website. [www.SPEE.org] Persons with an interest in evaluation practices should take the opportunity to offer comments and suggestions.

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