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E N E R G Y I N V E S T M E N T B A N K I N G , L P

## MUSINGS FROM THE OIL PATCH

June 12, 2007

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Managing Director

**Note:** *Musings from the Oil Patch* reflects an eclectic collection of stories and analyses dealing with issues and developments within the energy industry that I feel have potentially significant implications for executives operating oilfield service companies. The newsletter currently anticipates a semi-monthly publishing schedule, but periodically the event and news flow may dictate a more frequent schedule. As always, I welcome your comments and observations. Allen Brooks

## Oil Companies Become More Bullish

**Global E & P expenditures of the companies surveyed will climb by 13% this year, up from the December 2006 estimate of a rise of only 9%**

The mid-year Lehman Brothers worldwide exploration and production capital expenditure survey for 2007 suggests that oil and gas companies are becoming more bullish about the outlook for their business. The survey reports that global expenditures of the companies surveyed will climb by 13% this year, up from the December 2006 estimate of a rise of only 9%. The major driver for the increased bullishness is a more than 50% increase in the growth in international expenditures to 20% from the earlier forecasted gain of 12.7%. This step-up in international expenditures supports the discussion among oilfield service industry executives about better overseas business opportunities. The service companies have been capitalizing on these improved market opportunities by shifting assets and staff abroad. Witness the growth in the international drilling rig count over the past 12 years, which is further reflected in this month's rig count jump the largest monthly gain since 2002.

### Exhibit 1. Oil Industry 2007 E&P Spending Ramping Up

(\$ Millions)	June 2007 Survey			December 2006 Survey	
	2007E	2006A	Year-to-Year % Change	Year-to-Year % Change	Companies Surveyed
U.S Spending	77,276	73,714	4.8%	5.1%	238
Canadian Spending	24,557	27,595	-11.0%	-7.5%	59
International Spending	205,872	171,393	20.1%	12.7%	72
Worldwide Spending	\$307,705	\$272,701	12.8%	8.9%	301

Source: Company data, Lehman Brothers, PPHB

The Lehman spending survey also showed that spending plans in Canada would fall more than initially anticipated. The larger 11% drop compared to the earlier estimate of a 7.5% decline is driven primarily by greater overspending of 2006 capital budgets. So while some producers reacted earlier in 2006 to falling natural gas prices and sharply rising oilfield inflation, many producers, especially those operating as income trusts, kept their 'pedal to the metal' despite

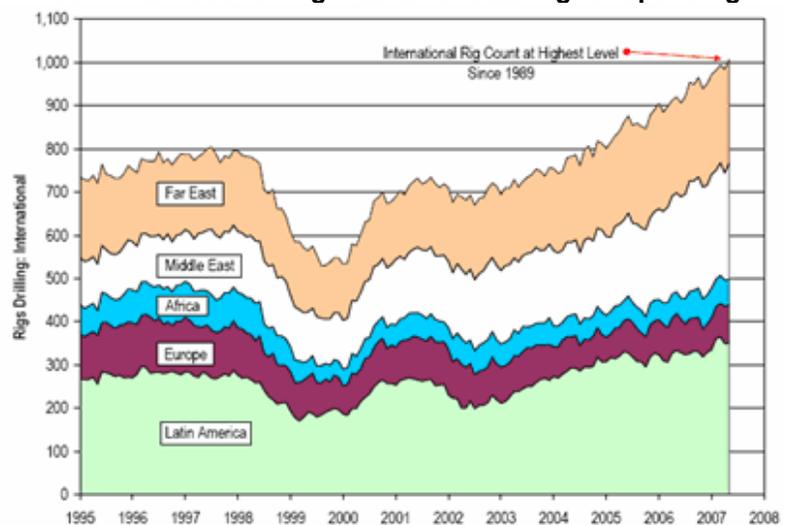
**Those producers who went forward with their drilling last fall may actually do fairly well on that spending decision**

**An improved pricing outlook could contribute to greater spending in 2007's second half than is presently anticipated by the survey's results**

weakening natural gas prices. As North American natural gas prices have rallied off their fall 2006 lows and are now in the high \$7 to low \$8 per thousand cubic feet range, those producers who went forward with their drilling last fall may actually do fairly well on that spending decision. Time will tell, but given weakening production trends in both Canada and the U.S. and continuing rising North American gas demand, it would seem we may have seen the worst in natural gas prices for some time.

In the United States, the Lehman survey suggests that the earlier estimated 2007 spending increase of 5.1% will be only slightly reduced to 4.8%, but it is still well within the margin of error for forecasting purposes. The survey pointed out that overspending of budgets in 2006 was essentially offset by budget hikes, thus the comparatively flat gain forecast by the new survey. We expect that if the U.S. economy holds up and expands in the second half as most economists and government officials are suggesting, then commodity prices will remain healthy. In the natural gas area, an improved pricing outlook could contribute to greater spending in 2007's second half than is presently anticipated by the survey.

#### **Exhibit 2. International Rig Count Reflects Higher Spending**



Source: Bear Stearns, Baker Hughes, U.S. Global Investors

**Some 45% of respondents indicate that they plan to spend 10% or more in 2008 than this year**

What may be the most important consideration for oilfield service executives and investors are the survey's indications for preliminary spending plans in 2008. According to the survey, only about 8% of respondents indicate that they plan to reduce their spending in 2008. That response may be deceiving as it may reflect a handful of companies transitioning exploration and development programs, i.e., a spending reduction due to timing issues. Importantly, some 45% of respondents indicate that they plan to spend 10% or more in 2008 than this year. Clearly, that margin of enthusiasm for increased drilling might be tamed if the global economy softens and energy prices weaken, or oilfield inflation accelerates. Indications are that

**On the day Lehman Brothers issued its capex report the OSX soared by 2.6%**

the latter issue may be less of a problem as the weakening in North American drilling activity in late 2006 and early 2007, coupled with growing equipment capacity additions has taken the wind out of the sails of oilfield price increases.

Last Monday when the Lehman Brothers' oilfield service analyst team issued its report on the capex survey and held a teleconference call with investors to discuss the results, the Philadelphia Oil Service Index (OSX) soared by 2.6% over its close on Friday. To Monday's intraday high, the OSX rose 2.8%. In contrast, the Dow Jones Industrial Index climbed only 0.1% with an intraday high rise of 0.4%, while the Standard & Poor's 500 Index was up 0.2% with an intraday peak gain of 0.3%. Investors apparently were wowed by the higher growth forecast for exploration and development expenditures. The fact that the broad stock market indices barely climbed highlights the impact of this survey on the investor love-affair with energy and oilfield service stocks.

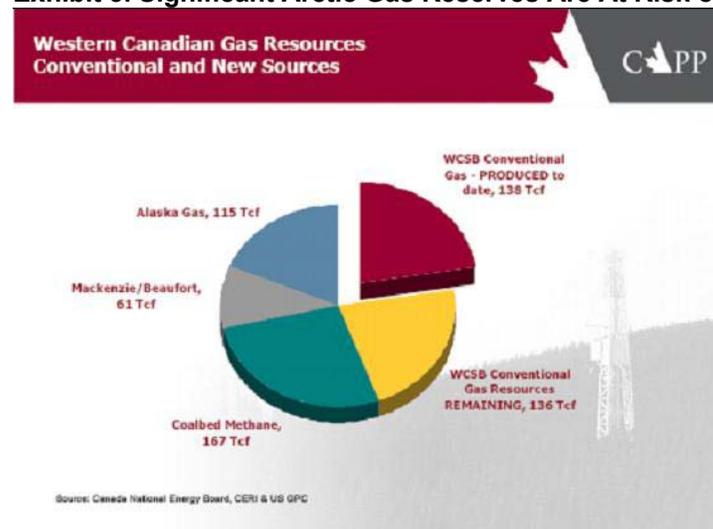
## ExxonMobil's Tillerson – Gas Pipeline Bad Cop?

**Tillerson said that the Mackenzie Valley natural gas pipeline in Canada was not financially viable without sizable government aid**

In a meeting with reporters following the company's annual shareholders meeting in Dallas, Texas on May 30, ExxonMobil (XOM-NYSE) Chairman and CEO Rex Tillerson said that the Mackenzie Valley natural gas pipeline in Canada was not financially viable without sizable government aid given the ballooning cost estimates to build it.

Earlier this year, ExxonMobil's 69.6% owned subsidiary, Imperial Oil Company (IMO-TSX), the lead on the Mackenzie Valley pipeline project, announced that the projected cost to construct the 1,200-kilometer natural gas pipeline had grown to \$16.2 billion from the

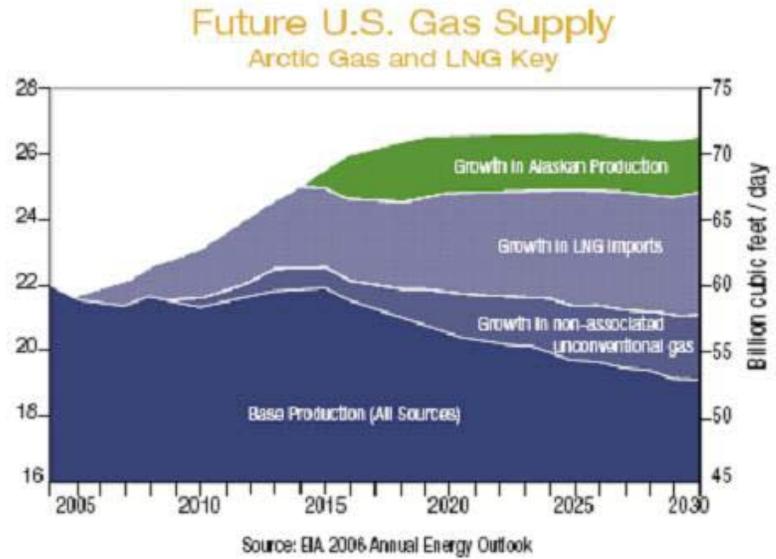
### Exhibit 3. Significant Arctic Gas Reserves Are At Risk of Loss



**The estimated 61 trillion cubic feet of natural gas reserves will not be available either for Canada or the United States**

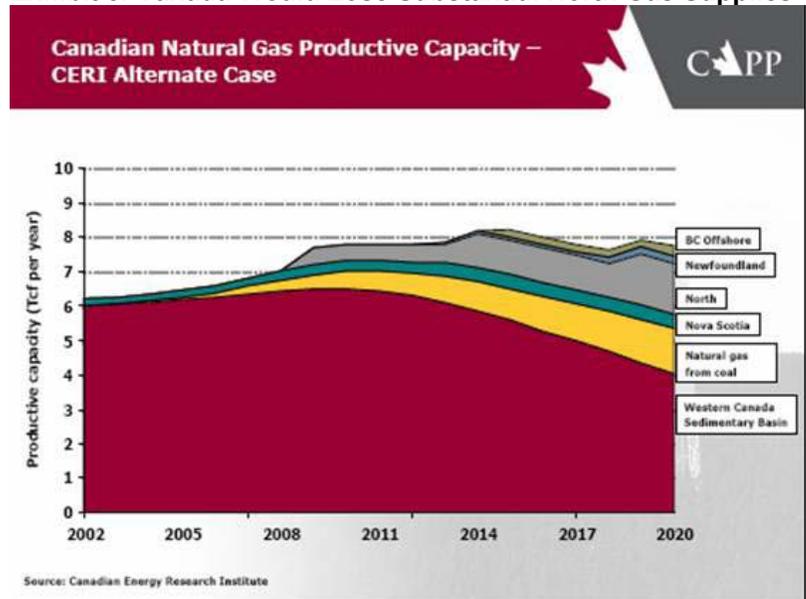
prior estimate of \$7.5 billion. The project is currently under review by Canada's National Energy Board. Without the construction of this line, the estimated 61 trillion cubic feet of natural gas reserves will not be available either for Canada and its growing energy-hungry oil sands developments, or for export to the United States that continues to depend increasingly on external gas supplies to meet its slowly rising demand.

**Exhibit 4. Lost Alaska Gas Hurts U.S. Supply Outlook**



Source: EIA

**Exhibit 5. Canada Would Lose Substantial North Gas Supplies**



Source: CAPP

**One major explanation for the rising costs has been the jump in the price of steel**

Mr. Tillerson further commented to the reporters that although his company has not done any recent cost studies for the Alaskan natural gas pipeline, he believes these costs have risen dramatically, also. One major explanation for the rising costs has been the jump in the price of steel, which is the primary component in the pipelines. In addition, as we have seen in the escalating costs to develop new oil sands projects, labor costs are rising sharply due to its lack of availability. Since new and expanded oil sands projects are scheduled for construction for a number of years into the future, the labor supply to support the new Arctic pipeline projects is shrinking. The remaining labor supply will cost much more than previously projected.

**Tillerson wasn't sure the Canadian government is in a position to create "enough room in the fiscal structure" to handle the rising construction costs**

What is most interesting in reading Mr. Tillerson's comments, and those of an Imperial Oil spokesman, is speculating on whether the former was playing the bad cop while the latter was the good cop. For example, according to press reports, Mr. Tillerson characterized the viability of the Mackenzie Valley pipeline as "a situation where it's not economic at the current costs." He went on to say that he wasn't sure the Canadian government is in a position to create "enough room in the fiscal structure" to handle the rising construction costs. If not, then according to Mr. Tillerson, "It may just be that this project is going to have to wait for a different cost environment." From Mr. Tillerson's statement, one could conclude that he believes this project is not only "uneconomic" but might actually be "dead."

**"Historically, projects that have opened a new basin have been subject to similar challenges"**

On the other hand, Imperial Oil spokesman, Pius Rolheiser, stated that his company doesn't believe the project is "dead", but he acknowledged that, "We're looking for a fiscal framework that recognizes the unique and now very high-cost nature of this development." He went on to point out that, "Historically, projects that have opened a new basin have been subject to similar challenges." Imperial Oil has asked the Canadian federal government to pay for related infrastructure such as roads, for accelerated depreciation (to shelter earnings and maximize cash flow) and for a guarantee that third parties will ship gas on the line.

**One way or another, these Arctic gas resources need to be developed sometime in the next decade – earlier rather than later**

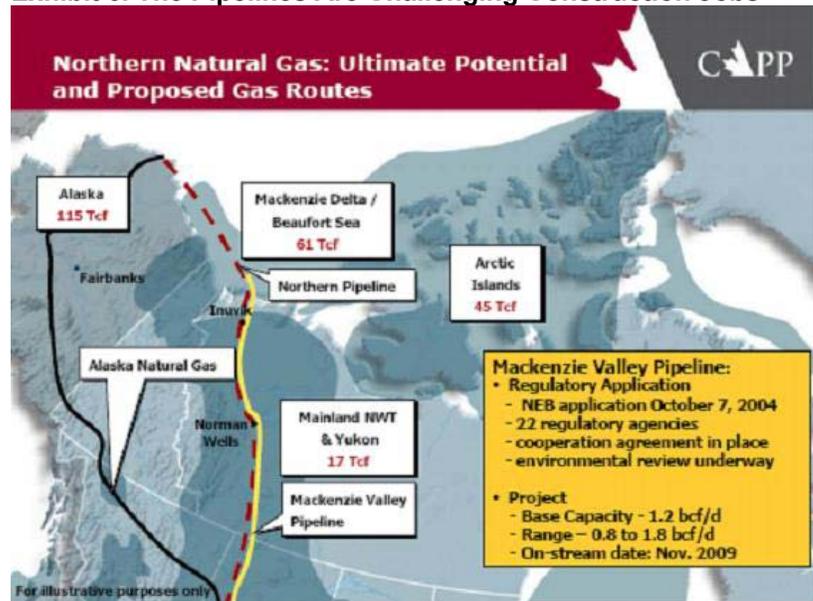
So what is to be gained by this good cop/bad cop routine? For the companies that own the natural gas reserves on the North Slope of Alaska and in the Mackenzie Valley, getting them to market in the foreseeable future could be very important for their earnings. For North America, U.S. natural gas consumption is highly dependent on Canadian gas supplies, as well as the economic feasibility of future oil sands developments. One way or another, these Arctic gas resources need to be developed sometime in the next decade – earlier rather than later. With the pipelines requiring three- to four-year construction timeframes, neither one can be brought on stream before the end of this decade. Given the limited construction resources and the steel pipe requirements for each line, they cannot be built simultaneously, so once the first line starts, the second line will be six to possibly eight years later in coming on stream.

As ExxonMobil, Royal Dutch Shell (RDS.B-NYSE), BP (BP-NYSE)

**How better to get politicians' and bureaucrats' attention than to threaten to walk away**

and ConocoPhillips (COP-NYSE), the primary North American arctic gas reserve owners, look to their future corporate growth opportunities, developing the arctic reserves is rising in importance. We suspect this realization may be behind Mr. Tillerson's comments. Attempting to convince the Canadian, Alaskan and U.S. governments to move forward faster on these pipeline projects with more favorable fiscal terms is becoming a more pressing need. How better to get politicians' and bureaucrats' attention than to threaten to walk away from major energy projects in a time when their delay can be measured in higher energy prices to consumers and even possible supply shortages. It's called turning up the heat!

**Exhibit 6. The Pipelines Are Challenging Construction Jobs**



**Is India the World's Overlooked Energy Dynamo?**

**Anticipating that foreign visitors who make the long and difficult journey to Beijing for the Olympics would want to spend more time touring the country, China embarked on a major infrastructure construction program**

Whenever global energy demand drivers are discussed, besides questions about the supply side of the equation, the most talked about subject is the growth of developing countries – China and India the most often cited. China's impact on the global oil market stormed onto the world stage in 2004 when its economy grew faster than forecasters anticipated, but more importantly, its oil consumption exploded. Part of the strength for China's demand explosion was its economy ramping up in preparation for the 2008 Olympics. The government is planning to use this event to showcase the country. Anticipating that foreign visitors who make the long and difficult journey to Beijing for the Olympics would want to spend more time touring the country, China embarked on a major infrastructure construction program. Building highways and new regional airports, combined with the growth of cities, not only to support more tourism but also the mass migration of agricultural

**When the IEA decided to announce its revisions in one fell swoop, energy markets were shocked**

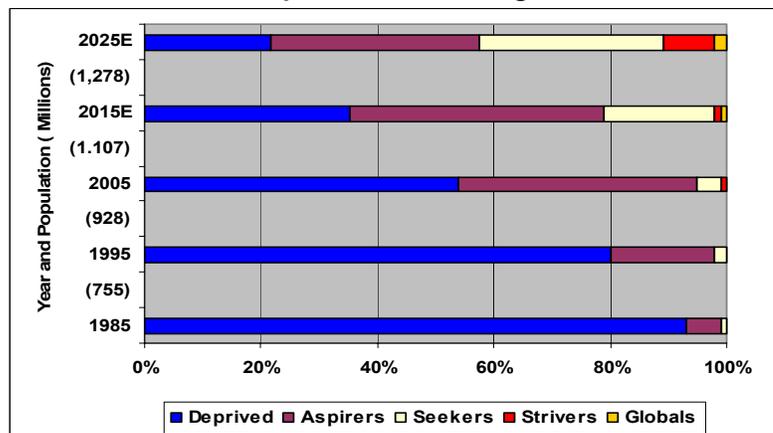
workers from the interior regions, started a global materials boom. These new infrastructure facilities require huge amounts of basic materials (steel, copper, cement, etc.) and energy. Until this massive construction phase passes, or global materials and energy capacity expands, China will continue to exert upward pressure on commodity and energy prices.

Another reason China's entry onto the global energy stage was so dramatic was due to the fact that the world's primary energy forecaster, the International Energy Agency (IEA), had a poor model, due somewhat to the lack of timely and accurate energy consumption figures for the country. As the IEA improved its forecasting model, it faced the question of how best to revise its historic data and unveil a new, sharply higher energy demand forecast. When the IEA decided to announce its revisions in one fell swoop, energy markets were shocked. However, the IEA's new forecast has proved quite accurate. But what is interesting is that while the focus on the impact of China on the globe's economy and energy markets continues, India's impact is possibly being overlooked.

**The MGI report predicts that if India's economy continues to expand at its current healthy pace, the average Indian's income will triple by 2025**

The IEA in its Monthly Oil Market Report discusses the economic activity and its impact on energy demand in both China and India each month, but it usually only identifies China's oil demand, while lumping India's in with the rest of Asia. Recently, there have been a couple of reports on India's economic growth. One was from American Express (AE-NYSE) that predicts India's current 100,000 "dollar millionaires" will grow by 12.8% per year for the next three years. This suggests the Indian economy will have about 45,000 additional "dollar millionaires" by 2010. The more dramatic India economic forecast was made by McKinsey & Company's McKinsey Global Institute (MGI). The MGI report predicts that if India's economy continues to expand at its current pace, the average Indian's income will triple by 2025. This growth will be more rapid than that of any other market except China.

**Exhibit 7. India Will Experience a Growing Middle Class**



Source: McKinsey & Company, PPHB

**India, currently the world's 12<sup>th</sup> largest consumer market will climb into 5<sup>th</sup> place**

The impact of this growth will be that almost 300 million Indians will emerge from poverty. It will produce about 1,000% expansion in India's middle class – from about 50 million people, or five percent of the population, in 2005 to 583 million in 2025, almost twice the current population of the United States. The MGI report, entitled “The ‘Bird of Gold’: The Rise of India’s Consumer Market” has a number of other interesting predictions. The report predicts that India, currently the world’s 12<sup>th</sup> largest consumer market, will climb into 5<sup>th</sup> place. As a result of this growth, India’s 23 million richest people will exceed the entire population of Australia. More important may be the fact that by 2025, 62% of India’s consumption will be urban-based, up from 42% now.

**By 2015, MGI sees the middle class accounting for 20% of the population with an additional 1% represented by the globals**

The MGI report examined the population growth of India and how its composition would shift as incomes expand. They divided the population into five groupings based on annual income levels. Those groupings are: globals; strivers; seekers; aspirers and deprived. According to MGI’s definitions, the globals are India’s urban elite, with their new cars and frequent trips abroad. The strivers and seekers represent the middle class, with rising incomes and robust consuming habits. Aspirers are those who seek to break into the middle class, but haven’t made it yet. The deprived are those who earn less than \$5.40 a day in 2005 U.S. dollars. Based on these definitions, India’s middle class has grown from 1% of its population in 1985 and only 2% ten years later, to 5% today. By 2015, MGI sees the middle class accounting for 20% of the population with an additional 1% represented by the globals. The globals are projected to double in population share by 2025, while the middle class will account for 41%. Over the twenty-year period from 2005 to 2025, India’s population is projected to grow by 320 million people, so the middle class and globals will account for a significant new global consuming force.

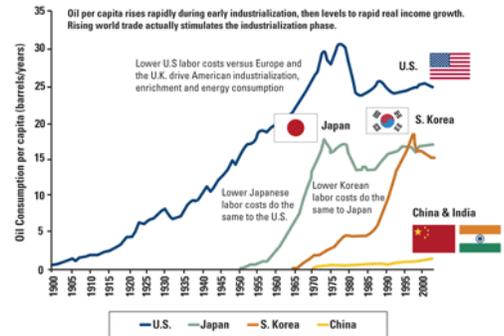
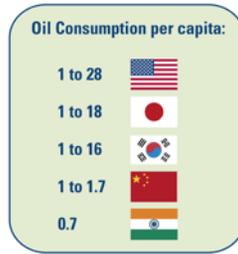
**Transportation, a key discretionary budget item, should expand from its 7% share of consumer spending in 1985 to 20% of a significantly larger income stream by 2025**

When the study examines population spending patterns into the future, it finds that more of the consumer’s income will be spent on discretionary items and less on necessities. Of particular interest to energy markets is the prediction that transportation, a key discretionary budget item, should expand from its 7% share of consumer spending in 1985 to 20% of a significantly larger income stream by 2025. What does that mean for India’s energy needs, and global oil consumption?

As we look at the historic growth in consumption of highly developed economies and the low per capita use of oil by countries such as China and India, it seems like a no brainer that oil and energy consumption will skyrocket in the future. We decided to examine the possible impact of this consumption growth and shifting demographics on India’s future energy needs. In 2005, India’s population used about 0.8 barrels of oil per capita, or almost 2.5 million barrels per day (b/d). It is important is to try to understand the consumption patterns of the various population segments. We believe that India’s middle class has consumption patterns that

**Exhibit 8. India Barely Registers on Oil Consumption Measure**

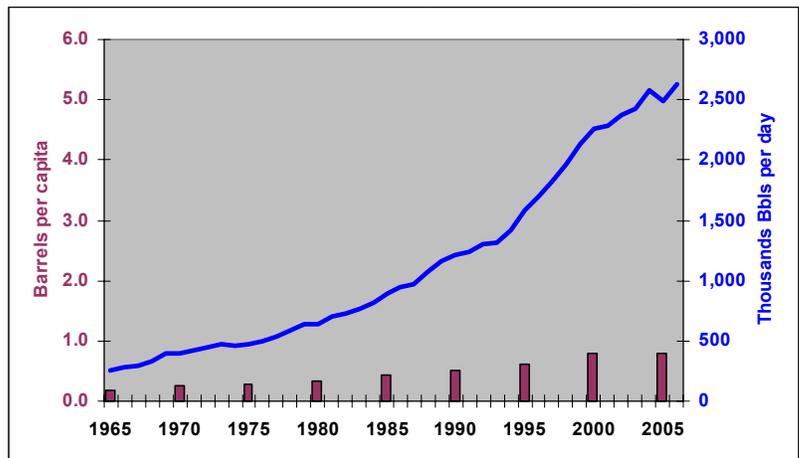
**Oil Consumption and Industrialization, 1900 to Present**



Source: Dr. Marc Faber  
Source: Energy & Capital

more closely mirror those of South Korea or Brazil. If we assume India's middle class consumes oil at about half the rate of per capita consumption of South Korea, or 8.8 barrels, then the balance of India's population is using only about 0.4 barrels each.

**Exhibit 9. India's Total and Per Capita Oil Consumption**



Source: BP, EIA, UN, PPHB

**If we assume India's middle class uses oil at the same per capita rate as Brazil, then the rest of India's population uses oil at the rate of 0.7 barrels per capita, or about the average for the entire country**

We also looked at the impact on consumption if India's middle class used oil at the same rate as South Korea. In that case, the remainder of India's population is using virtually no oil, which we know is not likely. Therefore, India's middle class oil consumption is probably somewhere between half of Korea's and some lower number. To examine what that lower number might be, we looked at oil use in Brazil, another large population/low oil per capita consumption country. In 2005, Brazil's per capita oil consumption was 3.6 barrels. If we assume India's middle class uses oil at the same per capita rate as Brazil, then the rest of India's population uses oil at the rate of 0.7 barrels per capita, or about the average for the entire country. This would seem to be a reasonable assumption.

As we look to India's future oil consumption, if its per capita consumption rate does not increase, even when factoring in the growing middle class, then by 2025 India's total oil consumption will increase by 27.6%. On the other hand, if the growing middle class consumes oil at half the rate of South Korea, then India's oil consumption would be almost five times higher than our baseline projection. At the full rate of South Korea's oil consumption, India's future oil consumption would be nine times higher than our baseline forecast.

When we project India's oil consumption growth assuming its middle class consumes at half Brazil's current per capita rate, its future volume would be roughly one-third greater than our baseline projection. If middle class consumption climbs to the full Brazilian rate, then India will be using almost two and a quarter times more oil than currently projected.

**At the full South Korean consumption rate, India's consumption per capita will be ninefold greater than its projected per capita usage**

So which oil consumption pattern will India's middle class follow: the South Korean or the Brazilian? The impact of the pattern followed could be dramatic. At the full South Korean consumption rate, India's consumption per capita will be ninefold greater than its projected per capita usage, while with the full Brazilian consumption pattern, it will only roughly double. In either case, it is quite likely that India's future oil thirst will be greater than anticipated. Although, as New York Yankees' great, Yogi Berra once said, "It's tough to make predictions, especially about the future."

## Oil Company Cash Flow Allocation Strategies

**The issue is whether dividend payments or stock buybacks are the most effective way to return surplus cash to shareholders**

We've written several articles lately discussing the issue of how best for managements to return surplus corporate cash to shareholders. The issue is whether dividend payments or stock buybacks are the most effective way to achieve this objective. After our latest missive, our good friend Art Smith, the head of oil industry research firm, John S. Herold, Inc., sent along a recent report he and his staff prepared entitled "Cash Flow Management – XOM Style", subtitled: "Strategies for Reinvestment of Cash Flows By the International Integrated Oils" (IOCs).

**Funds returned to the shareholders of the IOCs reached \$98 billion in 2006, and this largess is claiming a greater proportion of the companies' cash flows**

The report pointed out how the funds returned to the shareholders of the IOCs reached \$98 billion (\$35 billion of dividends and \$63 billion in share repurchases) in 2006, and that this largess is claiming a greater proportion of the companies' cash flows. These increased returns to shareholders have been supported by strong cash flow growth, evidenced by a doubling of the combined cash flows since 2002 for the six leading IOCs. As Mr. Smith points out, based on his knowledge since the 1970s (he's been at this almost as long as I have), in all prior energy bull markets the oil industry's mantra has been to invest every dollar of cash flow, and them some, in drilling new holes in the ground searching for more oil and gas. It was this strategy, and the poor shareholder returns it produced that has been responsible for the greater attention to dividends and share

**Herold pointed out that the six IOCs devoted 53% of their 2006 cash flow to dividend payments and share repurchases**

repurchases in recent years. For once, it appears the old expression 'This time is different!' may be right.

The Herold research paper examines the amount of cash flow the IOCs have had and are likely to have in the future, how they have spent and may spend it, and the potential impact of their decisions. The analysis begins with the recognition that dividends and share repurchases have increased as a share of the growing cash flows of the companies. Herold pointed out that the six IOCs devoted 53% of their 2006 cash flow to dividend payments and share repurchases. They averaged spending 45% of their cash flows on dividends and shares during 2002-2006. Last year, the amount of money spent on dividends and share repurchases was equal to 90% of the total amount the companies spent on new capital expenditures to grow their companies.

Given the vast amount of money devoted to share repurchases by these IOCs, the study's conclusion of the financial impact was most interesting and, as the authors concluded, counterintuitive. They found that the "relative or absolute dollars channeled into share repurchases do not directly translate into superior total shareholder returns." The conclusion was supported by their examination of the allocation of cash flows by the individual IOCs during 2002-2006 between dividends and share repurchases and the resulting share price performance.

**Investors were applauding the aggressive merger and acquisition program of ConocoPhillips and its use of financial leverage was truly working for shareholders during the current bull market for commodities**

Herold was quite intrigued that ExxonMobil (XOM-NYSE), who led the pack in terms of dollars committed for share repurchases (buying back 16% of its 2002 share base) and dividends paid, finished in the middle of the pack in stock performance with an average annual total return of 16%. In contrast, ConocoPhillips (COP-NYSE) invested the least amount of money in dividends and share repurchases, but topped the group in return performance with a 21% average annual total. The conclusion is that investors were applauding the aggressive merger and acquisition program of ConocoPhillips and that its use of financial leverage was truly working for shareholders during the current bull market for commodities.

**As the energy bull market developed, investors focused on the lower valued companies attempting to capitalize on both rising company earnings and expanding share valuations**

An unanswered question is whether ExxonMobil's beginning valuation was much higher than its competitors such that the other companies were actually closing a gap that enhanced their short-term performance. ExxonMobil has outperformed its competitors in most return and profitability measures for a long time. As a result, we suspect its shares were more highly valued by investors than the competitors. As the energy bull market developed, investors focused on the lower valued companies attempting to capitalize on both rising company earnings and expanding share valuations.

After weighing the pros and cons of dividends and share repurchases, Herold favors the latter. Their reasoning is that share repurchases help support the share price by offsetting the creeping dilution from option exercises and grants. They also believe that

**When shares are repurchased, management is buying an interest in the reserves they know best – their own**

had the share-repurchase-money been directed into new exploration and development projects, oilfield inflation would have been worse than it was, and would have negatively impacted investment returns from new projects. The final and, in Herold's view, the best reason to support share repurchases is that companies are able to buy oil and gas reserves at below-market asset values. By definition, when shares are repurchased, management is buying an interest in the reserves they know best – their own. When their share price is below the intrinsic value of their reserves, stock repurchases are accretive to the remaining shares outstanding. This action also eliminates the potential problems that could arise from acquiring other companies. However, share repurchases at the expense of acquiring other companies does eliminate the potential to diversify the company's asset base.

**Share repurchases are a cost-effective strategy for boosting volumetric/operational metrics on a per share basis, which seems to be the only concern of Wall Street analysts and investors**

At the end of the day, Herold would like to see more funds devoted to enhancing organic growth within the IOCs, but it recognizes the challenges management has in attaining this objective in a cost-efficient manner. Management must always be trying to balance the cost and potential returns from organic growth investments (drilling new wells) versus reserve acquisitions through either share repurchases or purchases of other companies. Depending upon stock market conditions and company valuations along with potential exploration projects, managers must constantly balance the return opportunities. In the interim, share repurchases are a cost-effective strategy for boosting volumetric/operational metrics on a per share basis, which seems to be the only concern of Wall Street analysts and investors. But if share repurchases haven't helped ExxonMobil shareholders as much as other strategies, one has to question this conclusion.

## Wind Power Is Good; Just Not In Front of Anyone

**He referenced a comprehensive survey of residents with homes near the project who expect it to diminish their property values by \$1 billion**

Last week, an op-ed article in *The Providence Journal*, authored by David Tuerck, the executive director of the Beacon Hill Institute and the co-author of several studies attacking the Cape Wind wind-farm project in Nantucket Sound, discussed why this is a poor project. He cited many economic and political reasons to oppose Cape Wind. But at one point, he referenced a comprehensive survey of residents with homes near the project who expect it to diminish their property values by \$1 billion. This same survey reported that business related to tourism in the area would fall by as much as \$200 million a year. These are parts of the economic case against the project.

Additionally according to Mr. Tuerck, "concerns abound that the project would pose threats to navigation, fishing and birds." However, virtually every review of the Cape Wind project has approved it – none having found any problems with birds, fish or navigation. We wonder if Sen. Ted Kennedy (D-Mass.) wants to sell his Hyannis home at a discount because of those turbines. He might not get the same per acre price as the \$103 million that Ron

**Wind farm developers are trying to come up with alternatives that are more consistent, thus being more economic, while remaining out of sight**

Barone paid for 40 acres in the Hamptons, but I suspect he would have a line of buyers and won't have to sacrifice any value despite the 'visual pollution.'

Wind power is recognized as possibly the most environmentally-friendly energy source available, although its consistency is always a question mark. But those wind turbines are not the most visually-pleasing sight. So wind farm developers are trying to come up with alternatives that are more consistent, thus being more economic, while remaining out of sight. How do you do that? One idea is to stick it up in the air, about six miles up. This would put it in the middle of the jet-stream where the winds are stronger and blow more consistently than ground-level winds and can generate up to a hundred times more energy.

Sky WindPower, a company based in San Diego, is developing a system with four rotors at the points of an H-shaped frame tethered to the ground by a long cable. The rotors act as the surface of a kite does, providing the lift needed to keep the platform in the air. As they do so, they also turn dynamos that generate electricity. This power is transmitted to the ground through aluminum cables. Should there be a lull in the wind the dynamos can be used in reverse as electric motors to keep the generator airborne. Sky WindPower believes it can generate electricity for as little as two cents per kilowatt hour, versus the three to five cents conventional energy generation costs.

#### **Exhibit 10. Sky WindPower Arial Wind Turbine**



Source: Sky WindPower, *Economist*

**Harvesting just one percent of the jet stream's energy would produce enough power for everyone on the planet**

Ken Caldeira, a climate scientist with the Carnegie Institute, who has worked with Sky WindPower, estimates that harvesting just one percent of the jet stream's energy would produce enough power for everyone on the planet. This would represent the holy grail of energy markets. Even at lower altitudes, the winds are stronger than they are at the surface, and that is attracting the attention of other investors.

A Canadian company, Magenn Power, has developed a proposal for a wind generator filled with helium that revolves around a horizontal axis, like a water mill, and could fly at an altitude of up to one

**Maybe all these wind farms can be located in remote areas of the country**

kilometer. A Dutch venture, with backing from Royal Dutch Shell (RDS.B-NYSE) and Nederlandse Gasunie, a Dutch natural gas company, is developing a dual kite system in which each kite turns a generator as it rises to an altitude of several hundred meters. At its peak altitude, the kite shape is altered so it catches less wind and it is then reeled back in using a very small amount of electricity. By having one kite reeling out at the same time the other is being reeled in enables the system to create a steady source of electricity.

We wonder how many people are going to want to see cables and wires rising into the sky in front of their homes. Or maybe all these wind farms can be located in remote areas of the country. Of course, we would then need to erect more transmission towers and power lines in order to move the electricity to the population centers. For those of us who fly, will we now be treated to announcements from the cockpit suggesting we look out our window to see the new power plants in the sky? I wonder if they can be used as signposts for the pilots to know where to turn left or right. Talk about more visual pollution!

## **Environmental Columnist Attacks Offshore Virginia Drilling**

Spending time at our summer house in Rhode Island, I am afforded daily the opportunity to read *The Providence Journal*, which I have concluded is a bastion of anti-energy attitudes. It often seems the paper's editorial staff works to find anti-energy op-ed columns from around the country to populate its paper. Another such article appeared a week ago when the newspaper printed a column written by a Washington-based environmental columnist, Edward Flattau. His column was attacking the current move in Congress to allow oil and gas drilling offshore Virginia.

**The recently proposed five-year plan for offshore oil and gas lease sales contained a sale of three million acres located in the central Atlantic Ocean off Virginia**

The recently proposed five-year plan for offshore oil and gas lease sales by the Interior Department contained a sale of three million acres located in the central Atlantic Ocean off Virginia. Before this sale could ever happen, however, Congress would need to lift the long-standing drilling moratorium that has been in place covering almost all areas of the outer continental shelf except the central and western areas of the Gulf of Mexico and certain areas off Alaska. President George Bush has indicated that he will approve such a modification. However, there have been few indications that the Democratic-controlled Congress will lift the moratorium. The plan is pending before Congress during a 60-day public comment period that ends July 1.

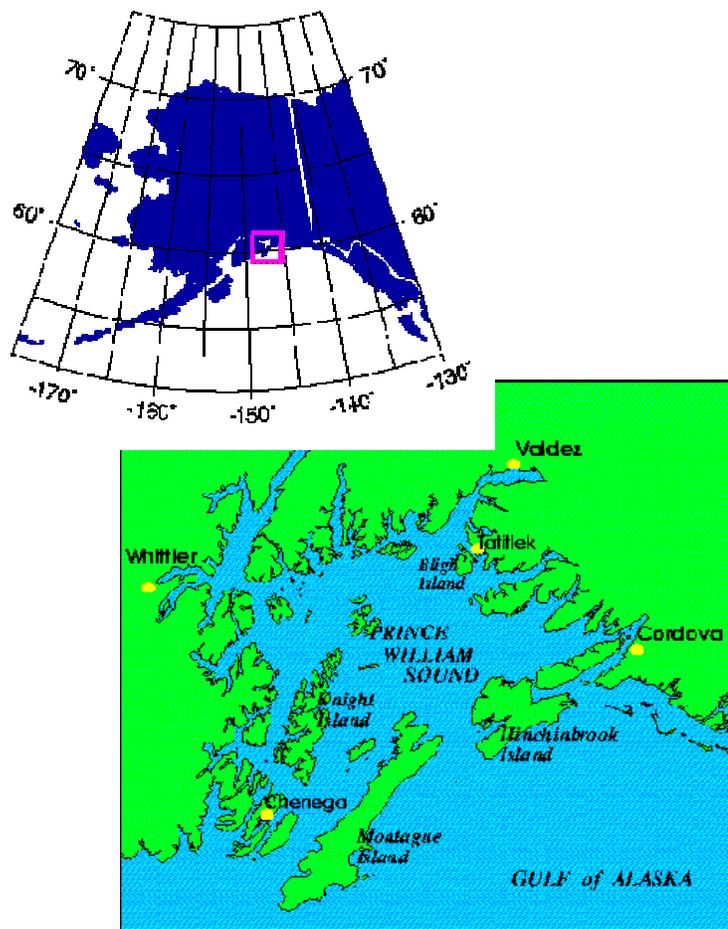
Mr. Flattau attacks the drilling plan because he fears the damage that might be done to the beauty of the chain of barrier islands off a 50-mile stretch of the Virginia coast. According to him, this beauty would be spoiled by a spill, a risk he also cites as a potentially destructive factor for important fishing grounds off Virginia. But in making his case against offshore drilling, Mr. Flattau points only to the environmental damage done by the Alaska oil spill in 1989.

**The Exxon Valdez was a tanker accident, not a drilling-related spill**

According to Mr. Flattau, “Oil from the notorious 1989 Exxon Valdez spill in Alaska’s Prince William Sound still sullies coastal tidal zones, and that disastrous tanker accident occurred 200 miles offshore, not 50.” The 50-mile reference is to the distance barrier from the coast that would dictate the location of offshore drilling if approved.

There are two very critical points Mr. Flattau gets wrong in dragging out the Exxon Valdez for his argument against offshore drilling. First, this was a tanker accident, not a drilling-related spill. In fact, almost all offshore oil spills in U.S. waters are caused by tankers and not by drilling. By restricting offshore drilling and the development of indigenous energy resources, we are mandating increased oil and petroleum product imports by tankers – suggesting a future potential for more oil spills.

**Exhibit 11. Location of Prince William Sound**



Source: State of Alaska

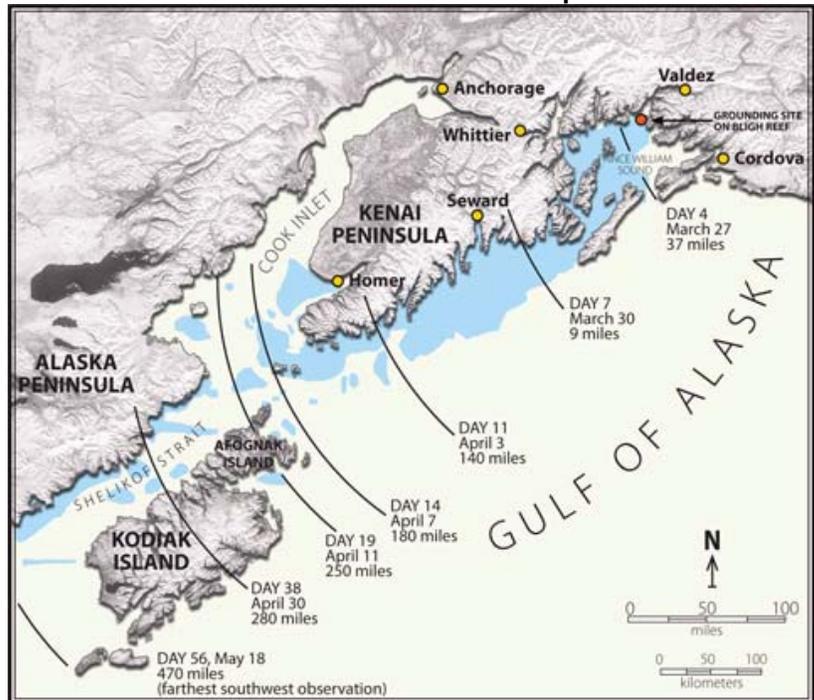
**The Exxon Valdez accident occurred within 50 miles, not 200 miles, of the coast**

The second consideration is that the Exxon Valdez accident occurred within 50 miles, not 200 miles, of the coast. Maybe Mr. Flattau confused the fact that oil from the spill covered heavily or

**The spill covered 1,300 miles of the 9,000 miles of coastline in the Prince William Sound**

moderately about 200 miles of Alaska's coastline. Actually oil was deposited on the Alaskan coast as far as 470 miles southwest of the spill. The spill covered 1,300 miles of the 9,000 miles of coastline in the Prince William Sound. Importantly, while the Exxon Valdez oil spill was one of the largest ever in the United States, involving 257,000 barrels or 11 million gallons, it is not even in the top 50 of international oil spills.

**Exhibit 12. The Extent of Exxon Valdez Oil Spill**



Source: EPA

**The most famous U.S. accident was the Santa Barbara oil spill in 1969 caused by Union Oil as it was drilling a well on the Alpha platform off the coast of California**

As far as offshore oil drilling accidents, the most famous U.S. accident was the Santa Barbara oil spill in 1969 caused by Union Oil as it was drilling a well on the Alpha platform off the coast of California. That same year, there was a drilling accident in the Gulf of Mexico. The impact of these two spills resulted in a total shutdown of offshore drilling until the industry installed downhole safety valves in all offshore wells as mandated from a study of the cause of the accidents by the federal government. Since that time, the release of oil due to drilling accidents has been minor over the almost 40 years since the Santa Barbara spill.

**The most spectacular offshore drilling accident was the Ixtoc well blowout in June 1979**

The most spectacular offshore drilling accident was the Ixtoc well blowout in June 1979. That offshore drilling accident happened in the Bay of Campeche off the coast of Mexico, some 600 miles south of Texas. The well blew out while being drilled and the resulting fire eventually sank the Sedco 135F triangular semi-submersible rig that had been drilling the well. Pemex had two relief wells drilled that eventually capped the blowout, but somewhere between 10,000-30,000 barrels per day flowed during the nine-month period until the

**The environmental damage was minimal**

well was shut down. Estimates are that the spill released 3.5 million barrels of oil, the largest accidental spill ever.

The U.S. government had two months to prepare for the oil spill to reach the Texas beaches. Along with putting booms in place and spraying oil dispersants on the oil slick, the weather helped eliminate some of the spill. Complicating the disaster was a collision in November of that year between an oil tanker (Burmah Gate) and a freighter (MIMOSA) five miles off the Galveston harbor, which released several million gallons of oil. The combined impact of these accidents did land oil on Texas beaches and required the rescue of a number of Ridley turtles, but the environmental damage was minimal.

**The case against drilling offshore Virginia is based mostly on emotionally charged scenarios**

The case against drilling offshore Virginia is based mostly on emotionally charged scenarios. Moreover, the scenarios are more tanker-related than oil drilling related. The tanker risk continues and is likely to grow due to increased oil imports into the U.S. as a result of our policy of stifling the development of domestic offshore oil and gas resources. As an environmental columnist, Mr. Flattau fails both to get his facts straight and make the proper argument against drilling. However, even the proper argument would fail because of the incredible record of the offshore drilling industry in avoiding oil spills.

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