MUSINGS FROM THE OIL PATCH

October 30, 2007

Allen Brooks
Managing Director

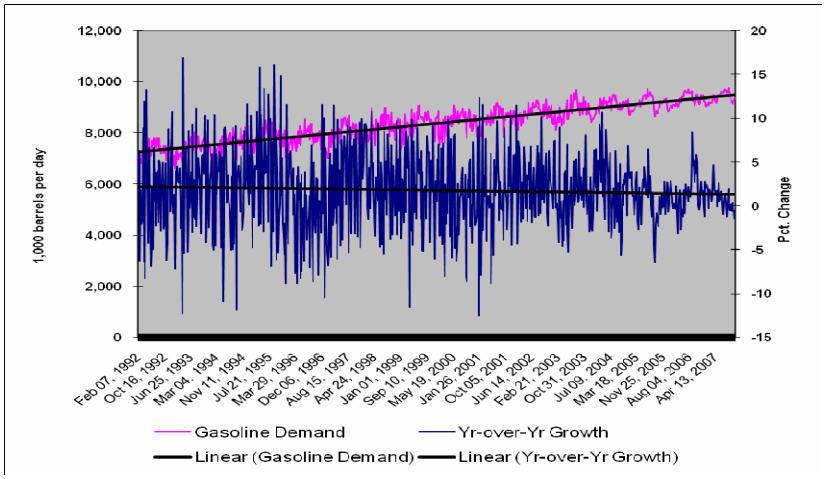
Note: *Musings from the Oil Patch reflects an eclectic collection of stories and analyses dealing with issues and developments within the energy industry that I feel have potentially significant implications for executives operating oilfield service companies. The newsletter currently anticipates a semi-monthly 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

Is $90 a Barrel Oil Price Cutting Into Demand?

"It does appear there's starting to be an impact with respect to demand as a result of price" – James Mulva

For a long time, petroleum industry participants and investors have marveled at the lack of an impact on oil demand from record high oil prices. As oil prices crossed the $90 per barrel threshold, that debate is being revisited. Last week when ConocoPhillips (COP-NYSE) reported its third quarter earnings, Chairman and CEO James Mulva said during the company's earnings conference call with investors that, "It does appear there's starting to be an impact with respect to demand as a result of price." Many people remain convinced that oil demand is not being impacted by high oil prices, yet virtually every oil executive, and even oil ministers of OPEC producing countries, says that the global oil market is well supplied.

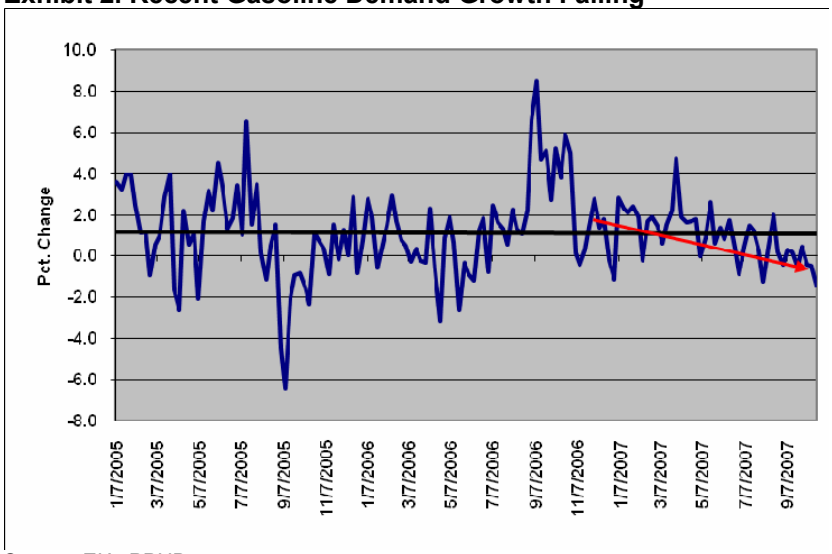
Exhibit 1. Gasoline Demand Growth Has Been Stable



Source: EIA, PPHB

We have been watching the demand side of the oil and energy equation, so we thought an examination of the gasoline demand picture in the United States was worthy of another look. If you look at the historic pattern of weekly gasoline consumption on a year over year basis since early 1992, you will see a very stable pattern of about 1.5% annual growth as shown by the trend line plotted on the weekly change data. At the same time, as seen by the chart in Exhibit 1, total gasoline demand has continued to rise over the entire time period.

Exhibit 2. Recent Gasoline Demand Growth Falling



Source: EIA, PPHB

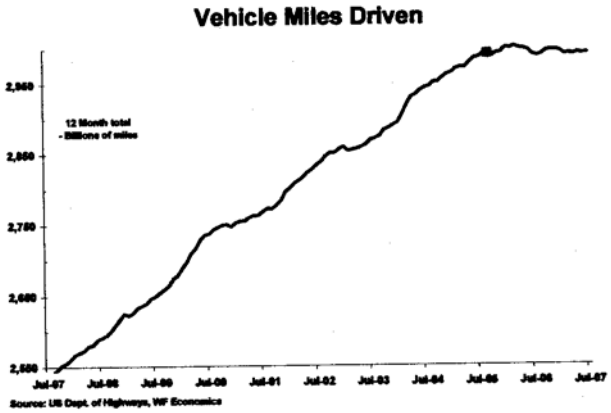
Since 2005, the gasoline demand growth rate has averaged about 1.5%, but so far in 2007, we are averaging only 1%

What is interesting is to look at is the growth rate in gasoline consumption weekly over the past few years. What you see in Exhibit 2 is that since 2005, that growth rate has averaged about 1.5%, but so far in 2007, we are averaging only 1%, with recent weekly demand comparisons declining. Some would argue that the recent fall in gasoline consumption is the typical seasonal factor at work. There is some truth to that observation, but it doesn't seem to explain the entire fall in demand.

Earlier this year, *USA Today* did an analysis on the pattern of growth in miles driven by Americans. It found that in February, there had been a decline in miles driven from February 2006 of 1.9%. There was a rebound in March to growth of 0.3%. What was more impressive was that over the prior 18 months, the growth in miles driven has flattened noticeably from the 2.7% average annual growth experienced between 1980 and 2005.

The slowing growth in miles driven is happening for the first time in 25 years. The last time growth was so slow was in 1981 when the United States was suffering from an oil shortage caused by the Iranian revolution, gasoline rationing and a recession. At that time, the inflation-adjusted price of a gallon of gasoline was $3.223.

Exhibit 3. Miles Driven Growth Has Slowed

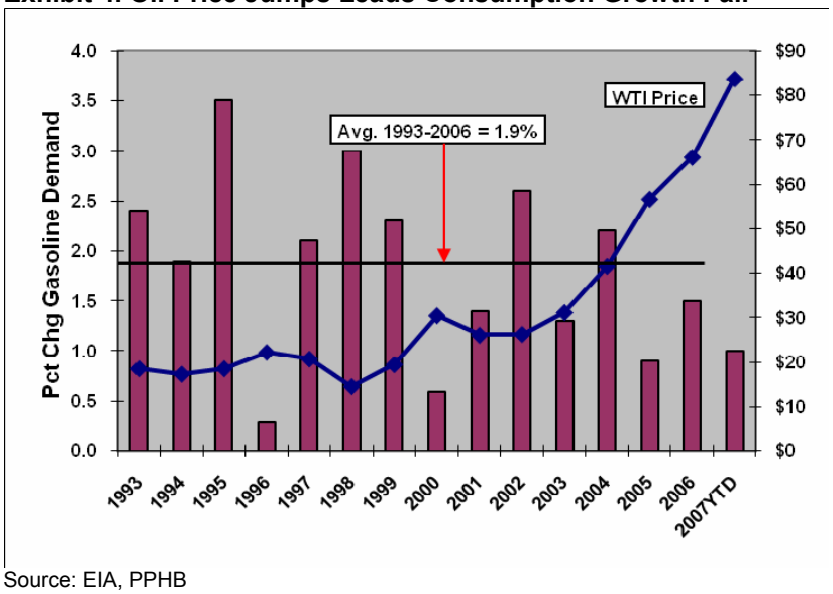


Source: USDOT, Wells Fargo Economics

Each time we had an increase in the average crude oil price, there was a slowing in the growth rate in gasoline consumption compared to the prior year

If the U.S. population was still embracing driving at the same rate as in 2000-2005 (+1.9% per year) there would be an additional 200-300 million miles clocked. It would seem that the data supports the conclusion that the number of miles driven is being impacted by high gasoline prices. Those prices have been boosted both by high crude oil prices and increased refiner profit margins. We can see that historic relationship in the chart in Exhibit 4. It shows that since 1993, each time we had an increase in the average crude oil price, there was a slowing in the growth rate in gasoline consumption compared to the prior year. That pattern was true until 2004, but as shown by the subsequent year's gasoline consumption increase, the growth rate fell well below the historic period average of 1.9%. At this point, we remain unconvinced that high oil prices are not impacting energy and oil demand.

Exhibit 4. Oil Price Jumps Leads Consumption Growth Fall



Source: EIA, PPHB

As oil prices take a larger bite from consumer budgets and food prices rise consumers will begin to change their driving patterns

If oil prices remain at current levels, or move higher as the bullish boosters suggest will happen, then we would expect further weakness in gasoline consumption. This slowing in gasoline consumption could turn negative, although that is hard to imagine given continued population growth, a reasonably strong economy and continued urban sprawl. On the other hand, as oil prices take a larger bite from consumer budgets and food prices rise, partially associated with the growth in biofuel production, consumers will begin to change their driving patterns. As we found in the 1970s and 1980s, it takes some time for consumer energy consumption patterns to change, but once they do, it takes even longer for them to revert to their old patterns.

Alberta's Royalty Decision – Sacrificing the Industry?

Premier Ed Stelmach announced his decision for changes to Alberta's royalty structure that had been under discussion following the recommendations of the Alberta Royalty Review Panel (ARRP) last month. In general, Premier Stelmach accepted those recommendations with some noticeable alterations. The primary difference is that the new royalty program will not commence until January 1, 2009, rather than following the ARRP's recommendation of a July 1, 2008, start.

Royalty payments by the province's oil and gas operators will be heading higher in the future

The bottom line is that royalty payments by the province's oil and gas operators will be heading higher in the future, and spending decisions regarding new projects and which ones to undertake, will likely receive greater scrutiny. Whether 2008 E&P spending will be cut as suggested by many of the major operators following the release of the ARRP's recommendations remains to be seen. The safe assumption is that a chunk of previously anticipated spending for 2008 will likely not be spent. We may hear talk about some companies redirecting their E&P efforts, but for most companies that type of adjustment takes time to implement, suggesting lower than expected capital spending in 2008 and possibly in 2009, as well.

Exhibit 5. Alberta To Gain Less Royalties Than Recommended

Alberta Government Revenue	AARP Proposed 2010	Gov't. Proposed 2010	% Change
Natural Gas	$ 742	$ 470	-37%
Conventional Oil	$ 456	$ 460	1%
Oil Sands	$ 666	$ 470	-29%
	$ 1,863	$ 1,400	-25%

Source: Alberta Government, CIBC, PPHB

Not all the details of the proposed royalty changes have been disclosed. In addition, the province needs to negotiate a transition to the new royalty scheme with the two largest and oldest oil sands producers – Syncrude and Suncor (SU-NYSE) – who have contractual royalty programs that do not expire until 2015. This

negotiation is necessitated by the adoption by Alberta of the ARRP recommendation that no grandfathering of royalty programs, either due to contractual issues or vintage classifications based on discovery date, be allowed.

The following is a brief discussion of the primary royalty program changes.

Conventional Crude Oil:

Royalties will be established based on a single sliding scale formula sensitive to oil prices and well production volumes. The new royalty rates will range up to 50% of net revenues and rate caps will be raised to C$120 per barrel based on WTI oil prices.

Conventional Natural Gas:

Royalty rates for producing gas wells will range from 5% to 50% and will be set on a sliding rate formula that is sensitive to prices and well production volumes. The rate cap will be raised to C$16.59 per Giga-joule or C$17.50 per Mcf.

The royalty rate calculation will be modified to foster the continued development of non-conventional gas reserves

The royalty rate calculation will be modified to apply lower royalty rates over a wider price range for wells with less productivity in an attempt to foster the continued development of non-conventional gas reserves (coal bed methane, tight gas and gas shales, for example), which are typically exploited with lower productivity wells.

Horizontal wells that do not meet the vertical depth test may still qualify for royalty relief

The government will also retain and revamp the Deep Gas Drilling program. In its current form, this plan provides royalty relief for new wells or deepened wells drilled into gas pools located below 2,500 meters, or 8,000 feet. Based on further information presented by government officials, it appears that the length of time required to drill these wells may also be considered, suggesting that horizontal wells that do not meet the vertical depth test may still qualify for royalty relief.

Oil Sands:

The pre-payout royalty, previously a 1% of gross revenues, will be converted to a sliding scale. The scale will be a 1% royalty when WTI oil is at C$55 per barrel or lower and rise for each dollar that oil is priced above that threshold up to a maximum 9% of net revenue when WTI oil is at C$120 per barrel or higher.

The post-payout royalty will also use WTI oil prices as the benchmark for the sliding scale. The scale will start at 25% of net revenues when WTI oil is at C$55 per barrel or lower and rise for each dollar that oil is priced above that threshold up to a maximum of 40% of net revenue when WTI oil is at C$120 per barrel or higher.

The government will develop a bitumen valuation methodology to determine the baseline formula for valuing bitumen involved in non-

arm's length transactions. All arm's length transactions will use the contract price.

The Stelmach Government also rejected the ARRP's recommendation to create an Oil Sands Severance Tax

There were a number of ARRP recommendations not adopted, some were minor, but several were more significant. Not accepted by the Alberta Government was a recommendation to reclassify primary oil sands wells as conventional heavy oil. Also, it did not adopt the ideas of treating natural gas liquids (NGLs) as conventional crude oil and ethane as conventional natural gas; introducing a processing fee on all gas processing facilities; and applying a flat 6% freehold mineral rights tax regardless of production. The Stelmach Government also rejected the ARRP's recommendation to create an Oil Sands Severance Tax and to implement the payment of both pre- and post-payout royalties once a company moves to post-payout status. The Government also rejected the proposal to implement a 5% upgrader capital credit for the construction of new upgrader projects in the province.

"…by reducing our industry's profitability, these changes likely will reduce oil sands activity"

President and CEO Marcel Coutu of Canadian Oil Sands Trust (COS.UN-TSX), one of the joint venture owners of Syncrude, said in a press release, "The significant increase in Crown royalties is a choice made by the Alberta government to respond to voter demands to extract more revenue directly in the form of royalties as opposed to pursuing the fuller potential of the resource through higher industry investment, which generates several times more in value through economic activity, employment and other benefits than do royalties. Furthermore, by reducing our industry's profitability, these changes likely will reduce oil sands activity. Some projects may no longer proceed in the same timetable, if at all, and some of the lower grade oil sands resource, which form part of every project, may never be recovered due to a now higher economic threshold." The same might apply to the entire Canadian oil and gas industry, at least until natural gas prices jump up to double digit levels.

U.S. Drilling Rig Fleet Growth Unprecedented

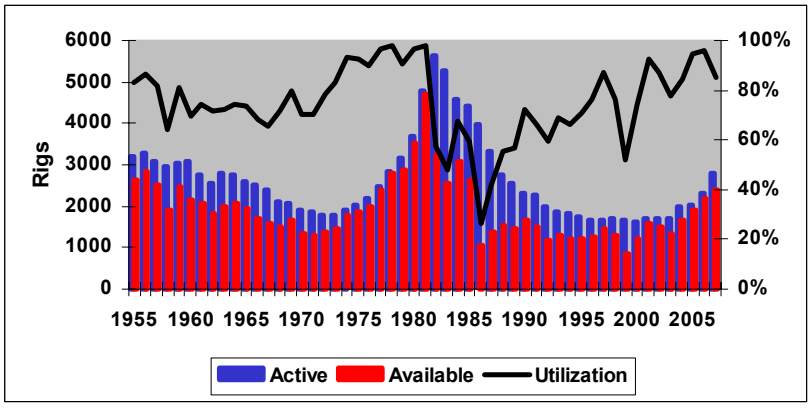
The 2,817-available U.S. drilling rig fleet grew by a net 519 rigs from the 2006 survey

The ReedHycalog annual census of the U.S. and Canada drilling rig fleets showed unprecedented growth last year. The 2,817-available U.S. drilling rig fleet grew by a net 519 rigs from the 2006 survey. The net increase was accomplished with 614 rig additions and 95 deletions. The new rig additions reflected 349 newly manufactured rigs, 189 rigs brought back into service, 71 assembled from parts and 5 rigs moved into the country.

There were only 202 incremental active rigs this year, which resulted in the fleet utilization rate falling to 85%

However, as the rig fleet grew the number of active rigs did not keep pace. There were only 202 incremental active rigs this year, which resulted in the fleet utilization rate falling to 85% from 2006's 96% rate. Given the condition of the rig market in 2006, the results of this year's survey are not really surprising. High rig fleet utilization last year was marked by operators clamoring for new equipment to the point they were willing to enter into long-term contracts for new

Exhibit 6. U.S. Rig Fleet Growth Contributes to Utilization Drop



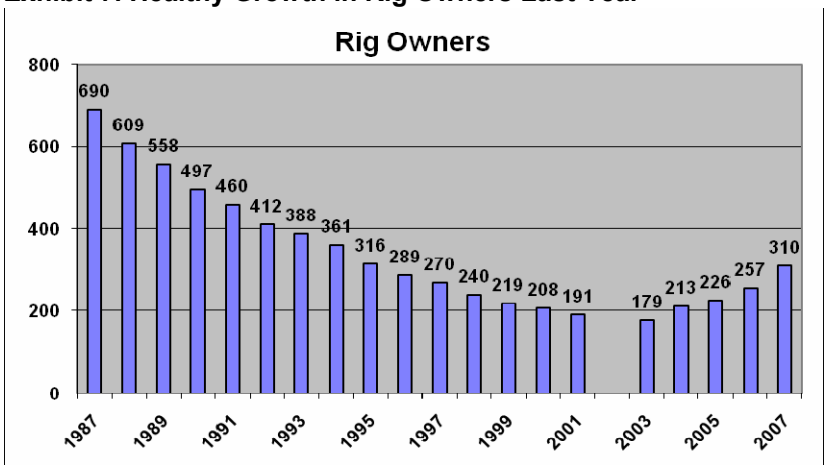
Source: ReedHycalog, PPHB

drilling rigs. Given that motivation, it is not surprising that contractors significantly expanded their rig fleets. The fact that we experienced a warm winter and a cool summer and a lack of hurricanes that combined to undermine the health of the natural gas market, it was not surprising that domestic drilling activity was weak.

The total number of contractors is the largest since the 1995 survey

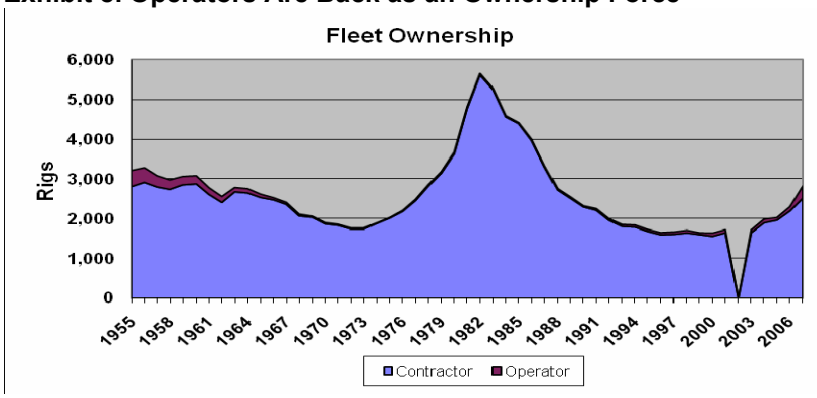
Two noticeable trends in the domestic rig market were evident from the survey. One was the increase in the number of rig owners and the second was the growth in the number of rigs owned by operators. The 2007 survey revealed a total of 310 contractors, an increase of 53, or 20%, from the number of contractors listed in last year's survey. The total number of contractors is the largest since the 1995 survey during the long decline in the number of contractors that had begun in 1987 and which did not finally bottom out until 2003.

Exhibit 7. Healthy Growth in Rig Owners Last Year



Source: ReedHycalog, PPHB

Exhibit 8. Operators Are Back as an Ownership Force

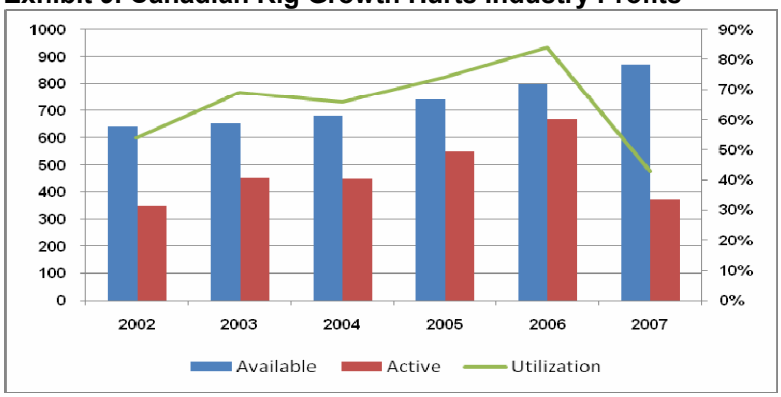


Source: ReedHycalog, PPHB

This is the largest number of operator owned rigs since 1956, which was during the time when operators were selling their fleets and exiting the drilling business

Today, operators own 306 rigs, a growth of 199 rigs. This is the largest number of operator owned rigs since 1956, which was during the time when operators were selling their fleets and exiting the drilling business. The growth of operator ownership of drilling rigs reflects two industry dynamics: 1) the inability to secure appropriate drilling rigs from contractors; and 2) the growth in exploiting unconventional domestic resources that are well-intensive so the operators do not have to worry about significant rig moves to keep the rigs busy. As we move toward 2008, it seems that only the second of the two trends remains intact and will likely remain so. Thus, we expect the growth in operator ownership to slow next year, except for the delivery of rigs operators may have on order as a result of the pressures from the first trend in 2006.

Exhibit 9. Canadian Rig Growth Hurts Industry Profits



Source: ReedHycalog, PPHB

Weak natural gas prices destroyed drilling activity resulting in the lowest number of active rigs in the last five years (371) and only a 43% fleet utilization rate

The Canadian drilling rig fleet also grew dramatically. The Canadian fleet increased by a net 72 units as the growth from 86 newly manufactured rigs along with two rigs assembled from parts was offset by 10 rigs moved out of Canada and 6 rigs were retired. Just as the overall Canadian rig fleet expanded by almost 10%, weak natural gas prices destroyed drilling activity resulting in the lowest number of active rigs in the last five years (371) and only a 43% fleet utilization rate.

The only other years when the growth of the rig fleet exceeded last year's increase were 1981 and 1982

The growth in the rig fleet over the past year marked the third largest measured increase in the annual rig fleet in the 52-year history of the survey. (The survey was not done in 2002 when ReedHycalog was being sold.) The only other years when the growth of the rig fleet exceeded last year's increase were 1981 and 1982 – the years that marketed the peak of the last industry boom. As people consider the boom of 2007, maybe they should also reflect on how that last boom ended.

Natural Gas Prices Rallying – Seasonal Recovery?

Natural gas futures prices on the NYMEX seem to have begun their seasonal rally in the second half of last week. Some 68 billion cubic feet of gas was injected into storage in the latest weekly report by the Energy Information Administration. This injection volume was below the estimates of analysts so there was a positive price response in the futures market as the volume of gas in storage versus the five-year average volume has shrunk slightly.

The natural gas market has suffered from at least five macro trends, each of which is negative for demand

The natural gas market has suffered from at least five macro trends, each of which is negative for demand. First has been the lack of hurricanes both this year and last in the Gulf of Mexico that might have damaged the gas producing infrastructure. Admittedly, this hurricane season is not over yet, but the odds do not seem to favor the development of a significant storm before hurricane-generating conditions in the Atlantic Ocean evaporate for the year. The U.S. also experienced a generally cooler summer than anticipated, although there were periods of significant heat during the season. We had a warm winter last year, and the forecasts recently announced for the upcoming winter are not encouraging for gas demand. Although the forecasts suggest a colder winter than last year, it will still be warmer than normal.

Domestic gas production volumes will probably grow, but by later next year that growth could either slow or return to its long-term decline pattern

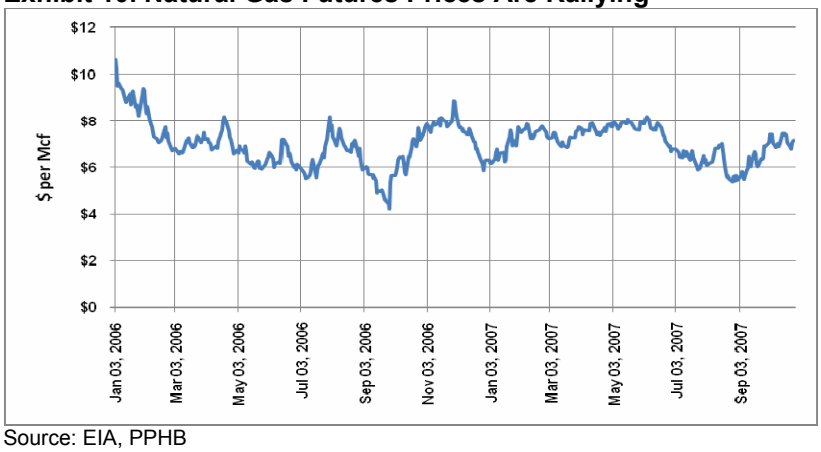
On the supply side, domestic production is greater than last year in response to the stepped up drilling of unconventional gas wells with their more prolific production, coupled with significantly higher liquefied natural gas (LNG) deliveries and sustained Canadian gas imports. At the present time, it looks like domestic gas production volumes will probably grow, but by later next year that growth could either slow or return to its long-term decline pattern as producers slow or cut their drilling activity.

Canada's gas exports to the U.S. are also likely to fall next year

Canada's gas exports to the U.S. are also likely to fall next year as the impact of a hiatus in gas drilling currently underway and the start up of more oil sands projects cuts into Canada's gas supply. The big question mark will be LNG shipments. At the present time, not all of the four main re-gasification terminals in the United States are fully utilized, so the opening of additional terminals will not significantly impact supply. At the present time, LNG cargoes are heading toward Europe and Japan who are willing to pay more than the U.S. for gas supplies. The latter market has become more important to the U.S. supply picture because of Japan's nuclear

power plant accident that has forced it to be very aggressive in bidding for LNG cargoes, something that will only intensify as winter electricity demand grows.

Exhibit 10. Natural Gas Futures Prices Are Rallying



Source: EIA, PPHB

Many of the unconventional gas resource plays and some of the traditional domestic gas basin drilling efforts are uneconomic at current gas prices

While natural gas futures prices have climbed significantly in the past few days, they have yet to reach a level ($7.18 per thousand cubic feet) that would encourage operators to ramp up their drilling activity. A number of Wall Street analysts and industry executives have produced analyses that show that many of the unconventional gas resource plays and some of the traditional domestic gas basin drilling efforts are uneconomic at current gas prices. Until gas producers see sustainable higher gas prices, they will be reluctant to step up their drilling efforts. A certain amount of drilling will be driven by lease expiration requirements, but even that strength will diminish if gas prices do not rally to higher levels.

"The prediction for a warmer than normal winter is still on course"

The big question in the near term for gas prices is what are the chances this winter's weather will be colder than anticipated, cutting gas storage volumes significantly. The National Oceanic and Atmospheric Administration's (NOAA) head of forecasting operations and acting deputy director of NOAA's Climate Prediction Center, Michael Halpert, said, "The prediction for a warmer than normal winter is still on course." He went on to say, "Even though December, January and February are likely to be milder than average for much of the country, people should still expect some typical winter weather this season."

WSI Corporation's season outlook for the upcoming three-month period of November through January calls for the period to average warmer than normal temperatures in all locations except that of the northern Plains, northern Rockies, and extreme northern New England. The WSI outlook compares against the average for the 30-year period 1971-2000. That outlook was somewhat echoed by AccuWeather.com's winter forecast for the November through March period.

In the population weighted regions, this winter may have over 75% of the days above normal in most of the nation southeast of a line from the Great Lakes to the Southwest

AccuWeather.com's forecaster, Joe Bastardi, says that there will be a cooler than normal start to this winter season and to its end, but the traditional winter months of December through February may be one of the top 10 warmest winters ever for the southeastern United States. He said that when they looked at the population weighted regions, this winter may have over 75% of the days above normal in most of the nation southeast of a line from the Great Lakes to the Southwest. The only signal for below normal temperatures is over the Pacific Northwest.

Mr. Bastardi has a high degree of confidence in his warm winter forecast, but it could actually turn out to be even warmer

Mr. Bastardi cautions that the winter pattern for the U.S. may be that we have the colder parts of the cold season relative to normal both early and late in the season. This upcoming sharp change in temperatures, compared to the record setting warmth of October, may confuse people into thinking that we are destined to have a record cold winter. The greatest change is that the warmth coming at the traditionally coolest time of the year will be very unusual. The most troubling aspect of Mr. Bastardi's forecast is that even though he and his organization have a high degree of confidence in their warm winter forecast it could actually turn out to be even warmer. If that comes to pass, barring some significant supply changes, we might have to forget a recovery in domestic drilling activity until 2009.

California Dreaming? Or California Leading?

On October 25, 2007, the San Francisco Climate Challenge kicked off a citywide competition among teams of neighbors, schools and businesses to see who can lower their energy consumption by the largest margin. The challenge is the outcome of an initiative from the non-profit organization, One Atmosphere, started by a few concerned citizens, led by a justice department lawyer, Paul Scott. Together with architect Mark Miller and software engineer Jonathon Weiner, Mr. Scott conceived the idea of getting people to try to figure out how they can conserve energy. He was joined by the San Francisco Department of the Environment and the local chapter of the Sierra Club in organizing the SF Climate Challenge.

The competition was designed to motivate citizens, schools and businesses to figure ways in which they could reduce their energy consumption without totally disrupting their lives

The competition was designed to motivate citizens, schools and businesses to figure ways in which they could reduce their energy consumption without totally disrupting their lives. The idea was that people and groups could form teams to compete. The competition is based on reduction in energy usage as reflected by comparing last November's Pacific Gas and Electric bill with this November's bill. Thus, contestants must have lived in their apartment, condo or house for one year and pay their own electric bill. Private residences account for 20% of San Francisco's emissions and it is hoped that the competition will lead to their reduction.

To enliven the competition, there are some serious prizes. For the greatest absolute reduction and the greatest percentage reduction in energy use, the winner will receive $5,000. The winning school will

get $2,500 and the winning neighborhood organization and business or other organization will get $1,000 each. There is a raft of other prizes including a $250 shopping spree at Home Depot and a $5,000 energy audit or home remediation service performed by a Bay Area environmental home performance firm. Other prizes include tickets to San Francisco Giants baseball games, free transit fares in the city, six-month memberships to health clubs in the San Francisco area and $250 worth of office supplies for an organization. Everyone who competes receives coupons for discounts at local hardware and home improvement stores for the purchase of fluorescent light bulbs, the number one climate change vehicle.

Everyone who competes receives coupons for discounts at local hardware and home improvement stores for the purchase of fluorescent light bulbs

So far, according to the sponsors, teams have been formed by various neighborhoods, social groups and sports teams. Three members of the Board of Supervisors for the city have formed a team, and reports are that the San Francisco Mayor's Office will be fielding a team, also. Following the SF Climate Challenge, the organizers have discussed issuing a challenge to other Bay Area cities for a similar competition. So far, Berkley has indicated it would compete. The organizers are also discussing taking their challenge nationwide with San Francisco competing against other cities in the country.

The idea arose from a few individuals, independently trying to figure out how they could help people understand that many small changes in how individuals use energy could have a cumulative and meaningful impact on total energy usage

The most interesting aspect of the SF Climate Challenge is that the idea arose from a few individuals, independently trying to figure out how they could help people understand that many small changes in how individuals use energy could have a cumulative and meaningful impact on total energy usage in the city, who were able to connect and create the event. We will be interested to see the results of the SF Climate Challenge. But we are really interested in how, and whether, this movement grows. It reminds us of the conservation efforts people undertook following the first energy shock in 1973-4. During that time, people were motivated to change their lifestyles and mobility patterns to save energy. Those efforts were grass-roots oriented, much like the impetus behind the San Francisco effort. Keep an eye on it as it could be the tip of an iceberg that sinks our energy consumption growth just as it did in the mid 1970s.

Sail Power to Improve Ship Fuel Economy

We recently read where a new 460-foot freighter, the *Beluga Sky Sails*, will make its maiden voyage ferrying wind turbine equipment between Denmark and the United States. What makes this vessel unique is that it will be the first ship, in modern times, equipped with a kite attached to the bow to help propel the vessel at a faster speed and with reduced fuel consumption. The kite and its operating and control systems are made by SkySails GmbH & Co. KG, headquartered in Hamburg, Germany.

It will be the first ship, in modern times, equipped with a kite attached to the bow to help propel the vessel at a faster speed and with reduced fuel consumption

SkySails was formed in 2001 and began intense research and development work to perfect its system. In 2003-4, the technology was tested on a model ship confirming the previously calculated

performance data. It was determined that the system was suitable for cargo ships. During 2004-5, an experimental system was tested on a yacht prototype. All of the essential system components, including the launch and recovery system, were tested and performed satisfactorily. The system was operated in a semi-automatic mode. The alpha-version of the autopilot was developed at that time. Since then, further testing of the system and all its components was undertaken on increasingly larger vessels, proving the technical performance of the SkySails equipment.

Exhibit 11. SkySails Will Boost Fuel Efficiency

Source: SkySails

The towing kite is designed so that the optimal aero-dynamic efficiency can be achieved at any wind speed

The SkySails system consists of three simple main components: a towing kite with a rope; a launch and recovery system; and a control system for fully-automated operation. The towing kite generates propulsion power. The optimal shape of the kite is a parafoil, similar to that of a paraglider. The towing kite is designed so that the optimal aero-dynamic efficiency can be achieved at any wind speed and that force is transmitted to the ship through the towing rope. The towing kite is fitted on every ship individually and the mounting system ensures the ideal alignment of the towing kite's force at every wind direction. The launch, which is done using a telescopic mast that lifts the towing kite to a sufficient altitude at which level the reefed kite unfolds like an accordion. The kite is recovered automatically in the reverse manner, and the process requires about 20 minutes.

With modern meteorological methods enabling precise five-day weather forecasting possible, and macro weather conditions and weather trends that can be forecasted for even longer time periods

There is a steering system employed that operates much like a paraglider – pulling to the left or the right of the control chords and modifies the aerodynamic profile of the kite. There is also a routing system, which employs a set of four modules: weather forecasting; performance calculation; decision-making; and a route recommendation module. With modern meteorological methods enabling precise five-day weather forecasting possible, and macro weather conditions and weather trends that can be forecasted for even longer time periods, a route can be laid out to maximize the efficiency of the SkySails system.

SkySails claims its system can significantly improve the fuel efficiency of vessels and reduce the annual average fuel cost by between 10-35%. It further claims that under optimal wind conditions, fuel consumption can be reduced temporarily by 50%. Since 98% of the world's international goods are carried via sea routes, and 98% of all cargo vessels are powered by diesel engines, according to SkySails, 25 billion Euros worth of fuel was purchased in 2002 by shipping companies. And that was before the tripling of crude oil prices and the corresponding rise in diesel fuel prices.

We were reminded of the experiment Bob Palmer, Chairman of Rowan Companies did to try to capture the wind as an aid in moving one of his drilling rigs

When we read the article about SkySails and its first deployment, we were reminded of the experiment Bob Palmer, Chairman of Rowan Companies (RDC-NYSE) did to try to capture the wind as an aid in moving one of his drilling rigs. Mr. Palmer had been toying with the idea of harnessing the wind since 1970 when he was involved in positioning the *Rowan Houston* on a well location off the coast of Nicaragua in 30-knot winds. After having sailing experts and engineers look at the issue and test rig up a sail on the *Rowan Juneau*, he was ready to act.

On March 18, 1978, Rowan was scheduled to mobilize the Marathon LeTourneau 116-C jackup rig *Rowan Louisiana* from the Gulf of Mexico to the Bay of Campeche off Mexico's coast for a new contract. That was back in the days when rigs were routinely towed by ocean-going tugs for long distance mobilizations, in contrast to today's use of heavy-lift ships to carry the rigs between geographic regions. On this day, 6,750 square feet of sail was hoisted and unfurled from the legs of the rig to assist in the tow.

Exhibit 12. Rowan Louisiana Under Sail

Source: Rowan Companies

According to the Rowan Companies' official history, the rig's speed was boosted by about one-half of a knot, which when figured on top

The one-half a knot speed improvement would have meant about $2,400 a day in savings

of the typical transit speed of 5-6 knots, was a noticeable improvement. The Rowan history suggests that a typical rig move in those days cost about $30,000 a day to move 150 miles, or about $200 a mile. The one-half a knot speed improvement would have meant about $2,400 a day in savings. While the savings and speed seem to be impressive, the sails were never used again as far as we know, which was confirmed with a Rowan Companies' spokesman. The spokesman did not know what the sails cost, but as we remember the endeavor, the sails, rigging and engineering cost somewhere in the neighborhood of $1 million.

Despite all the positives of the Rowan sail experiment, the fact that it was never tried again suggests that the economics were not favorable

As we remember the details of the rig move, despite the underwhelming economic benefit from the sails, the operational challenges were minor. The Rowan history quotes Clayton Brants, the son of a Rowan insurance broker, who was onboard the rig during the mobilization, as saying that after the sail was hoisted, the furling gear was tested, rolling the sail in on a spar and then out again. The furling went very easily, something Mr. Brants attributed to the design and skill of the mechanics that put it all together – marrying oilfield technology and the craft of sailmaking. The narrative also claims that the sails actually helped reduce the natural tendency for the rig to heel when the wind direction was not directly astern. (SkySails claims its system will not generate any vessel heeling regardless of the wind's direction.) Despite all the positives of the Rowan sail experiment, the fact that it was never tried again suggests that the economics were not favorable.

While it will be interesting to see if the SkySails system is successful and catches on with the maritime industry, we doubt that drilling rig contractors will be ordering any systems anytime soon. The adoption of the heavy-lift ship as the preferred mob vehicle for drilling rigs is unlikely to change, especially given the escalating cost to build new rigs. The SkySails announcement brought back some interesting remembrances of Bob Palmer's rig sailing experiment.

Corrections

We need to make corrections to two articles in our last Musings From the Oil Patch (October 16, 2007). First, we revolutionized Canada's politics by identifying Premier Ed Stelmach of Alberta as Prime Minister of the province. Yes, we do know and understand the governmental structure of Canada. We just glossed over the title. Thanks to one of our eagle-eyed Canadian friends, we stand corrected.

Second, we suggested that Pete Miller, Chairman of National Oilwell Varco (NOV-NYSE) was using charts and graphs showing steadily increasing drilling activity as part of his rationale for suggesting the company was in control of its own destiny. We did not see the

presentation, only assumed from the picture we saw of Mr. Miller, but have been corrected on our assumption. We apologize for insinuating that Mr. Miller said something he didn't.

Contact PPHB:
1900 St. James Place, Suite 125
Houston, Texas 77056
Main Tel: (713) 621-8100
Main Fax: (713) 621-8166
www.pphb.com

Parks Paton Hoepfl & Brown is an independent investment banking firm providing financial advisory services, including merger and acquisition and capital raising assistance, exclusively to clients in the energy service industry.