

MUSINGS FROM THE OIL PATCH

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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

Thoughts on Unocal Bid

Late last Wednesday evening, CNOOC Limited (CEO-NYSE), the 70%-owned subsidiary of China National Offshore Oil Corporation, launched a counter offer to acquire California-based Unocal Corporation (UCL-NYSE), who had previously agreed to be acquired by Chevron Corporation (CVX-NYSE). CNOOC is offering to pay \$18.5 billion in cash, roughly \$67 per share, for Unocal. This tops the Chevron stock and cash offer currently valued around \$60.

Since 1988, foreign company acquisitions of U.S. companies need to be reviewed by the Committee on Foreign Investment

When rumors of the potential CNOOC bid surfaced, concerns were raised in this country about the impact of having a domestic oil company acquired by the Chinese. Under the normal acquisition review process since 1988, foreign company acquisitions of U.S. companies need to be reviewed by the Committee on Foreign Investment. The committee's responsibility is to ascertain that an acquisition would not lead to the transfer of critical technology, assets or knowledge that could be detrimental to U.S. security interests. The outcry from Congressional members about this takeover seems to be driven more by the environment of high crude oil and gasoline prices due to the recent explosion in China's energy demand than true national security concerns.

Demands that the CNOOC offer be blocked based on national security grounds stretches credulity. Yes, the buyer is a subsidiary of a Chinese government-controlled oil company, but 30 percent of CNOOC's stock is held by private investors. There are accusations that the CNOOC bid is unfair since the company is getting no-interest and low-interest loans from its government-owned parent and state-owned banks to fund the deal. Maybe these loans are the first indication of how the pile of U.S. dollars accumulating in China due to our current account trade imbalance will be recycled. However, just as Chinese companies are attempting to buy U.S. companies, U.S. corporations are scrambling frantically to try to make

By banning Chinese ownership of some of our oil and gas resources, how do we justify today's huge presence of foreign-based companies in the U.S. oil patch?

investments in soon-to-go-public Chinese companies. Commercial protectionism is a dangerous policy, especially given the U.S.'s record of sponsoring an open and free market.

A tougher concept to grasp is that by banning this transaction because we fear Chinese ownership of some of our oil and gas resources, how do we justify today's huge presence of foreign-based companies in the U.S. oil patch? Companies such as BP plc (BP-NYSE), Royal Dutch/Shell (RD-NYSE), Total (TOT-NYSE), Eni (EIPAF-Pink Sheets), Citgo, EnCana (ECA-NYSE) and BHP (BHP-NYSE), all foreign based, just to name a few, should be sent home under this anti-Chinese rationale. These foreign-based oil companies hold substantial U.S. acreage under federal leases both onshore and offshore in the Gulf of Mexico. These companies and their foreign partners hold significant oil and gas resources and are major U.S. producers. They own refineries, pipelines and gasoline stations. So what would become of these investments? Besides that, we appeared to have no problem when BP was buying ARCO and Amoco, two major U.S. oil companies.

The oil industry is a strange beast at times. Companies that partner in exploration and development projects in one part of the world may be fierce competitors for leases in other regions. CNOOC has said it will continue to sell Unocal's domestic oil and gas in the U.S. market, but the company is clearly interested in developing Unocal's Asian oil and gas resources, even though some of them are already under long-term contract. CNOOC's ownership of Unocal would likely ensure the retention of all its employees. In contrast, Chevron has said it does plan to eliminate some Unocal positions if it completes the purchase. We doubt, however, that Chevron would let any of Unocal's technical people go since this is one area where the oil and gas industry is facing a serious challenge in retaining technical talent. Of course, CNOOC is in need of technology, especially offshore, an area where Unocal is highly rated.

Chevron has a clear advantage by the fact it has received Federal Trade Commission approval

CNOOC is the leanest Chinese oil company, having only about 2,500 employees. It is run by a western-educated manager, and it has been aggressive in trying to grow. This takeover battle probably still has several chapters yet to be written. Chevron has a clear advantage by the fact it has received Federal Trade Commission approval. It also has an advantage in that it has the ability to force a vote on its offer, and that vote will probably take place in the next 45-60 days. However, will investors, looking at the \$7 per share cash premium of the CNOOC offer, be willing to vote down the bird-in-the-hand-Chevron bid for a riskier, alternative bid that may still be rejected by the U.S. government? The answer may be some accommodation between Chevron and CNOOC over Unocal's assets.

Canada Oilfield Industry White Hot!

We attended the Petroleum Service Association of Canada (PSAC) investor seminar June 16-17 in Calgary. We understand that we

The conference was the best attended since the late 1990s

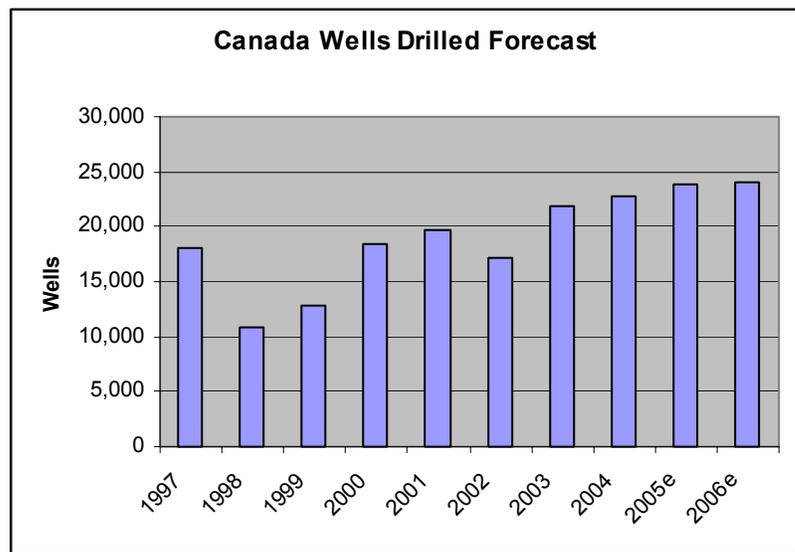
were fortunate weather-wise as the day before the conference, when we arrived, and the first day of the conference were the only days in June that the region was not hit by rain. The conference was the best attended since the late 1990s, with over 100 investors and analysts in the audience.

There were 29 company presentations grouped into panels of three or four managements. Each management had 20 minutes to present the investment merits of its company. While the companies spanned the entire scope of the oilfield service industry, there were several common themes. Canada is on track for another record year for drilling, assuming the rains stop. As a result, almost every company is in a strong capital spending mode adding new equipment or upgrading existing equipment to meet the activity growth projected to continue through 2006, at least. Manpower to staff the additional equipment remains a universal concern, but PSAC, and many of the companies, has been proactive for a number of years in encouraging training of new workers.

A growing focus on coal bed methane and further expansions of oil sands operations are adding to the positive activity outlook

While Canada is primarily a natural gas-driven oilfield market, a growing focus on coal bed methane and further expansions of oil sands operations are adding to the positive activity outlook. These unconventional markets are generating different oilfield needs and opportunities. Other trends evident in Canada are industry consolidation and an increased emphasis on more timely drilling and production information. The bottom line of these presentations was that Canadian producers are facing significant upward pressure on finding and development costs. They must do everything in their power to keep oilfield costs under control, which means embracing new technologies and alternative ways of operating. Barring a collapse in global economic activity that craters oil and gas prices, Canada's oilfield service industry has a bright and profitable outlook.

Exhibit 1. PSAC Forecast



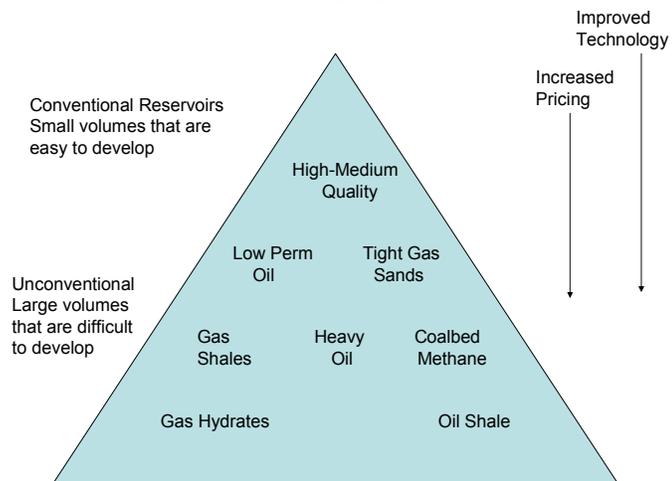
Source: CAPP; PSAC; PPHB

Many of the presentations relied on industry association forecasts of the number of wells to be drilled in 2005. The working assumption behind these forecasts is that the well count also will increase in 2006, but not by a significant amount due to expectations for lower oil and gas prices trimming industry cash flow and incentives to drill. PSAC's forecast, revised in April, calls for the industry to drill 23,825 rig-released wells in 2005, up five percent from the 22,696 wells drilled last year and about 24,000 wells in 2006. On the other hand, the total number of wells drilled in 2004, according to the Canadian Association of Petroleum Producers (CAPP), was 23,920. This is a difference of 1,224 wells. In 2003, that difference was 1,563 wells. We believe these differences reflect both the way the wells are counted, either rig-released or merely completed, along with a difference in the service well count.

The primary influencing factor in the outlook for Canada's oilfield service industry is the persistent move down the quality of the natural resource pyramid

The primary influencing factor in the outlook for Canada's oilfield service industry is the persistent move down the quality of the natural resource pyramid. As this trend evolves, the service intensity of oilfield activity increases giving the companies increased revenue opportunities.

Exhibit 2. Oil and Gas Quality Pyramid



Source: Schlumberger

An influencing factor in the well drilling forecasts is the outlook for coal bed methane (CBM), or natural gas from coal (NGC) as it is often called in Canada. Last year, the industry drilled about 1,000 CBM wells. Forecasts call for 3,000 to 5,000 CBM wells in 2005. Most of the presenters are assuming that the CBM well count will be between 3,000 and 4,000 wells in 2005. CBM appears to be one of the hottest trends among the producing industry. The other industry driver that comes from this growing trend is the need for increased pressure pumping capacity to supply the horsepower to fracture the coal seams to enable the methane gas trapped inside to emerge.

Just like the drilling industry, every pressure pumping company is

A number of the presentations discussed the difficulty in hiring new workers

building new equipment for the expanding domestic market. Several of these companies were also building new pressure pumping equipment for the Russian and Former Soviet Union markets, where they have expanded.

A number of the presentations discussed the difficulty in hiring new workers. Historically, the Canadian oilfield service industry has relied on farm youths from the plains of Alberta and other provinces. As a result of the aging of the Canadian oilfield work force and the cyclical nature of the business that has made working in the oil patch less attractive, recruiting new hands has become more of a challenge. Mr. Maury Cobb, Chairman of Trican Well Service Ltd. (TRI-TSE), described his company's efforts to train new workers. One of their greatest challenges is to determine if these prospective hands are willing to work in the outdoors with its rigorous physical demands. As Mr. Cobb put it, most of their candidates are well schooled in working Gameboys® and other computer games, but learning (and liking) to hook up pressure pumping equipment at 2 am in the rain is critical to success with his company.

Exhibit 3. Age of Canadian O & G Workers

18 to 24 years	1%
25 to 34 years	7%
35 to 44 years	22%
45 to 55 years	35%
56 to 64 years	25%
65 years and over	7%
Refused	4%

Source: *Oilweek* survey

PSAC has been a leading force in trying to convince provincial governments to provide incentives to encourage oil and gas companies to try to drill through the spring breakup period

The highly seasonal nature of the Canadian oilfield service market has always made retaining employees in the industry a challenge. Few workers enjoy being hired in the fall only to be laid off when spring breakup arrives and have to hope to get rehired in the summer. The lack of employment continuity has discouraged many potential workers from staying with the oilfield business. PSAC has been a leading force in trying to convince provincial governments to provide incentives to encourage oil and gas companies to try to drill through the spring breakup period. What are needed to achieve a more level 12-month activity profile are financial incentives to offset the inherently higher costs of operating during the breakup period. British Columbia has stepped forward with incentives and actions such as strengthening roads to carry the heavy equipment during the spring thawing period.

Exhibit 4. Canadian O & G Worker Tenure

9 years or less	11%
10 to 19 years	22%
20 to 29 years	34%
30 to 39 years	26%
40 years or more	7%

Source: *Oilweek* survey

One way producers can help fight rising finding and development costs is to reduce the time it takes to drill wells and to improve the quality of the wells they drill and complete

One way producers can help fight rising finding and development costs is to reduce the time it takes to drill wells and to improve the quality of the wells they drill and complete. Canadian producers have been pushing the service industry to develop the new equipment, tools and techniques to achieve these objectives. Coiled tubing drilling rigs, new combined drillpipe and coiled tubing rigs and faster moving rigs are populating the industry. Drilling and downhole information is contributing to better drilling results. Pason Systems, Inc. (PPP-TSE) has developed drilling measurement equipment that has improved the knowledge of wells as they are being drilled. IROC Systems Corp. (IROC-TSE) has developed remote gas monitoring and high speed, high quality communications based on voice over internet protocol (VOIP). These two companies are examples of the cutting edge in drilling communications. We have always believed that more, better and faster information during the drilling, well completion and production life of wells can help boost reservoir recovery factors. Pason has expanded operations to the United States, but has yet to achieve profitability. Why hasn't it been better received by the domestic producing and service industries? I think this trend is consistent with the historical pattern of numerous other oilfield technologies being developed in Canada before migrating to the rest of the world. Profitability will come. The uniformity of the Western Canadian Sedimentary Basin helps contribute to the development of new technologies. The ease of raising capital and starting new companies in Canada reflects openness on the part of the industry to new ventures.

New oilfield information technologies continue to be developed in the United States, but their pace of development and industry acceptance has been slow

New oilfield information technologies continue to be developed in the United States, but their pace of development and industry acceptance has been slow. OYO Geospace (OYOG-NASDAQ) has developed a permanent reservoir monitoring system, but there has been only one commercial installation in the North Sea. The system, we understand, has performed extremely well with data being monitored in real-time both in Norway and Houston. Another interesting emerging technology is the intelligent drillpipe being developed by IntelliServ, a joint venture between a private Utah-based company and Grant Prideco (GRP-NYSE). While transmitting downhole drilling information at incredible speeds, this system could become the equivalent of the downhole internet that could be available to transmit all forms of downhole information during the drilling and well completion phase. These new technologies, we believe, will play a significant role in helping overcoming the increase in oilfield costs.

E&P Spending Signs Point Higher

The 356 companies surveyed by Lehman indicated spending would rise by 13.4% this year

Lehman Brothers released its mid-year E&P spending survey confirming what everyone knows – spending is going up faster than the end-of-2004 surveys projected. The 356 companies surveyed by Lehman indicated spending would rise by 13.4% this year, or more than twice the 5.7% increase projected at year end. The increase is being driven by greater spending in the United States (16.9% vs. 7.8% forecast in December) and internationally (13.3% vs. 4.5%). The forecasted spending growth in Canada will be lower (6.4% vs. 8.6%) reflecting overspending of 2004 budgets, increased oil sands spending, the growth of income trusts and a shift in spending outside of North America.

Exhibit 5. Lehman Brothers Mid-year E&P Spending Survey

(\$ Millions)	2005E	2004A	Year-to-Year % Change	Companies Surveyed	Year-to-Year % Change in 12/04	Companies Surveyed
U.S. Spending	44,744	38,278	16.9%	265	7.8%	249
Canadian Spending	19,259	10,097	6.4%	78	8.6%	75
International Spending	128,615	113,492	13.3%	98	4.5%	87
Worldwide Spending	192,618	169,866	13.4%	356	5.7%	327

Source: Lehman Brothers

These higher spending indications reflect the greater confidence producers have in the sustainability of high commodity prices

While the number of companies surveyed is greater than in December (356 vs. 327), we doubt this accounts for much of the substantial spending increase projected. The intriguing fact is that oil companies are already looking at healthy spending increases in 2006. At this point, 65% of the companies surveyed indicated they planned to spend more in 2006, with 80% of those companies indicating they planned double-digit hikes. These higher spending indications reflect the greater confidence producers have in the sustainability of high commodity prices. That belief is supported by the report that the companies are using a West Texas Intermediate price of \$40.85 per barrel in their budgeting compared to \$35.81 in December. For natural gas (Henry Hub) the estimate is \$5.74 per mcf versus \$5.39 at year-end 2004.

Exhibit 6. Surveyed Oil Company Outlook for 2006

Expected Direction of 2006 Capital Spending

Up 20% or More	25%
Up 10% to 20%	26%
Up 1% to 10%	14%
Flat	33%
Down 1% to 10%	1%
Total Responses	205

Source: Lehman Brothers

Given the level of global oil and gas prices, the stubbornly tight global oil supply/demand balance and producers' growing confidence that these conditions will last for some time, it is not surprising to see very healthy spending increases projected for both 2005 and preliminarily for 2006. This spending outlook is certainly

music to the ears of oilfield service company execs and investors.

Here Come The Norwegians

Today there are 34 jackup and 4 semisubmersible rigs on order or under construction. A number of these units have been ordered by Scandinavian-based oilfield service companies. Many of the companies are Norwegian, and many are start-up companies. Why is capital flowing into Norway so readily? First, the county is the third largest oil producer and also a significant natural gas producer. As such it has a natural symmetry with the oilfield service industry, and an understanding of the risk the capital is taking. Second, the country has a long maritime history that at times in the past has included significant involvement with the oilfield business. Third, the Oslo Stock Exchange is receptive to start-up companies. Lastly, there is a bevy of knowledgeable industry analysts.

U.S.-based offshore contract drillers are barely participating in this wave of new rig orders

Interestingly, U.S.-based offshore contract drillers are barely participating in this wave of new rig orders. They know that every time they order a new rig, investors punish them by selling their stock. Domestic drillers are trying to maximize their earnings and generate returns for investors by paying down debt, upgrading rigs and paying dividends. It will be interesting to see, in the next 18-36 months when these newly ordered rigs arrive, whether the Norwegian owners become acquisition targets. This phenomenon occurred in the past. Stay tuned.

Exhibit 7. Recent Oslo IPOs

Company	Ticker	Share capital 1,000 of nom. value	Nominal value	Date	Market value NOK 1,000	Managers	Type
Odfjell Invest	OIL	50,000	10.00	10/11/04	457,500	Pareto Securities & DnB NOR Markets	Jack up
Sevan Marine	SEVAN	13,234	0.20	12/13/04	648,466	Pareto Securities & Enskilda Securities	FPSO
Bjørge ASA	BJORGE	43,821	1.00	12/17/04	306,747	DnB NOR Markets & Pareto Securities	Oil Service
Petrojack ASA	JACK	238,980	5.00	2/23/05	437,333	ABG Sundal Collier & First Securities ASA	Jack up
Exploration Resources ASA	EXRE	74,445	12.00	3/9/05	837,505	Carnegie ASA & DnB NOR Markets	E&P
APL ASA	APL	9,738	0.50	3/18/05	1,110,132	Enskilda Securities & First Securities ASA	Oil service
Awilco Offshore	AWO	1,141,334	10.00	5/11/05	2,510,934	Enskilda Securities & Fearnley Fonds	Jack up
Havila Shipping ASA	HAVI	362,750	25.00	5/24/05	594,910	Pareto Securities	Supply

Source: OSE

Exhibit 8. Pipeline of Possible Oslo IPOs

Pipeline	Indicative share price	Amount of shares	Managers	Type
Eidesvik Offshore ASA	45	315,000	DnB NOR Markets & Pareto Securities ASA	Supply
Artumas Group, Inc.	32.5	7,350,000	ABG Sundal Collier & Terra Securities	E&P
Deep Sea Supply ASA	10	42,000,000	First Securities, ABG Sundal Collier & Fearnley Fonds	Supply
GEO ASA	20	35,750,000	Enskilda Securities & Pareto Securities	Subsea
Eastern Drilling ASA	NA	NA	NA	Semi
Thule	NA	NA	NA	Jack up
Sea Drilling	NA	NA	NA	Jack up/semi
Neptune Marine	NA	NA	NA	Semi

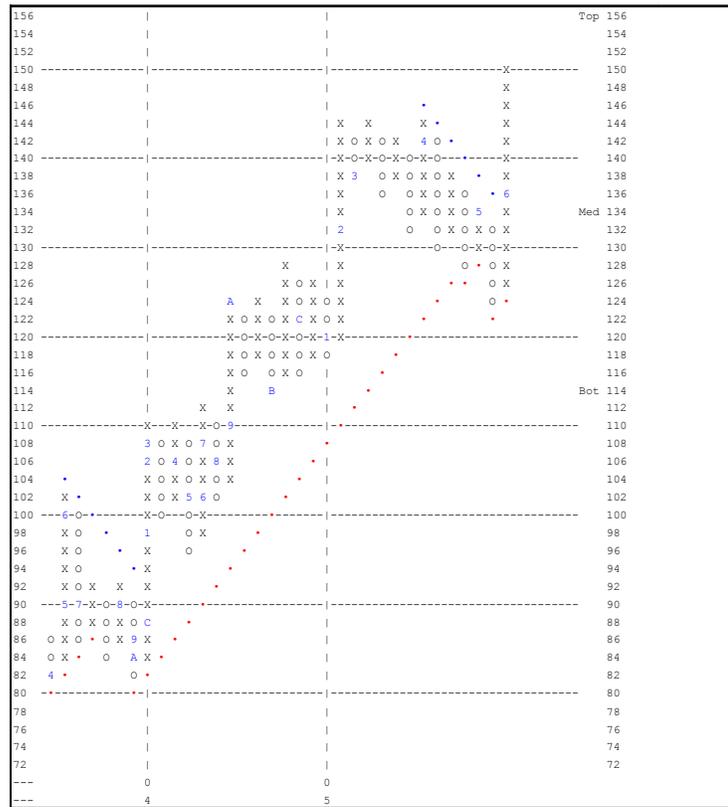
Source: Marine Money Research

Oilfield Service Stocks Continuing to Move

In our last issue, we discussed a technical analysis of oilfield service industry stocks. In that article, we noted that based on point and figure analysis, the Philadelphia Oil Service Index (OSX) had given a Bearish Signal Reversal. That is a bullish signal and based on research by the Dorsey Wright firm, 92% of the time this chart pattern appears there can be a 24% price increase from the prior low (124). That percentage increase would take the OSX to 154.

Exhibit 9. OSX Stock Index Breakout Pattern

The OSX has established a second bullish technical trading pattern that could propel the index to 165



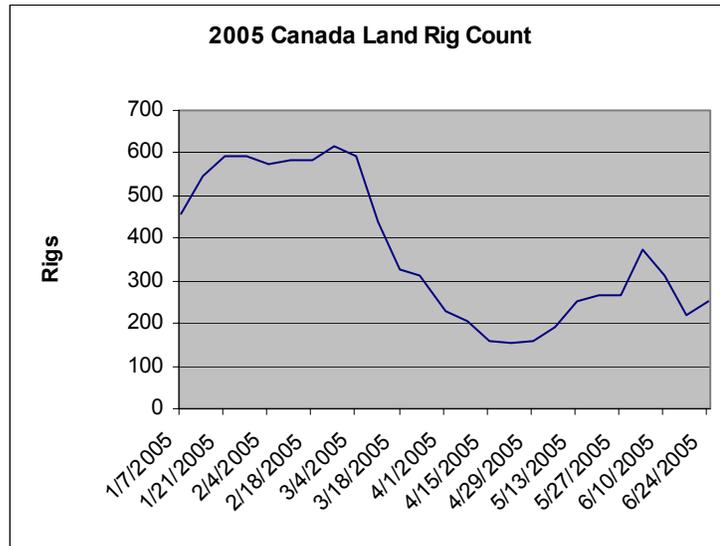
Source: Courtesy of Dorsey, Wright & Associates, Inc.

Now the index has established another significant chart trend that could further power it, and the underlying oilfield service stocks, higher. When the OSX reached 144, it was even with three Xs in columns to the left, stretching back to early 2005. When the OSX reached 146, it broke this pattern, referred to as a triple wide spread. For stock market technicians and investors who follow chart patterns, breaking this pattern should bring more money into the group and possibly take the index to the 165 level. The fundamental catalyst for that move would likely be continued strong oil prices (\$60 per barrel is a new record), positive 2Q05 earnings reports from the service companies starting in about three weeks, upward revisions of analyst earnings estimates for 2005 and 2006 and further weakening in the outlook for other investment sectors.

One caution, however, is that Canada's second quarter has been a disaster due to the combination of spring breakup (no surprise) and a severe rainy period that has shut down drilling rigs and all other forms of oilfield activity. Canadian oilfield service companies and domestic companies with large Canadian exposure could report disappointing earnings results in July. That weakness, however, will probably be muted by management statements of expected significantly higher business for the remainder of the year.

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Exhibit 10. Rainy Spring Weather Hurts Rig Count Progress



Source: Baker Hughes; PPHB

UK More Aggressive On Fallow Fields

UK Energy Minister Malcolm Wicks is leading the charge to force oil companies holding acreage in the North Sea that they are not actively developing to yield it to other, more aggressive companies. Under a new initiative, Stewardship, as part of the government's North Sea task force PILOT, the Department of Trade and Industry (DTI) has been given greater powers to order companies to give up or sell assets that are not being drilled. Stewardship and PILOT come under the government's Fallow Field Initiative that has been running for three years. The most significant change under the Stewardship initiative is the establishment of a time table for oil companies to hand back fallow fields.

The definition of fallow fields has also been tightened

As a result of discussions with the industry about this new initiative, North Sea major oil companies have agreed to hand back oil fields that have been lying fallow for two years. The definition of fallow fields has also been tightened. Previously, a license block could lie undrilled for four years before being declared fallow. That time period has been cut to three years. The two-year time frame for handing the field back starts when it has been declared fallow.

The government's effort to open up their offshore has been rewarded by a high interest level from smaller and new oil companies

Under the Fallow Field Initiative, 19 fallow discoveries were initially identified by the DTI. Today, only six of them remain with the original operator and still have no activity plan. Under the new Stewardship initiative, the DTI has the power to ask for extensive information about how every field in the North Sea has been worked, dating back to 2002. If the DTI decides too little work has been performed, it can demand further investment in specific oil company projects.

In the face of a maturing UK sector of the North Sea, the British government has become much more aggressive in seeking to shift fallow acreage into the hands of smaller oil companies who are anxious to develop the fields. The government's effort to open up their offshore has been rewarded by a high interest level from smaller and new oil companies. The latest batch of exploration licenses to be auctioned by the government drew tenders from 144 companies, 28 of which were newcomers to the North Sea.

The move to increase the pressure on the holders of fallow acreage is being driven by a study jointly commissioned by the DTI and the UK Offshore Operators Association that showed the potential impact on the North Sea of a fall in exploration activity. The study looked at what would happen if exploration activity fell back to the levels experienced in 2002 and 2003. Under that scenario, 40% of the rigs and platforms in the North Sea would need to be decommissioned by 2020. That could result in the disappearance of the North Sea oil industry by 2035 leaving behind as much as 50% of the UK's offshore oil reserves. The economic consequences for the UK of this scenario would be devastating.

The high cost of decommissioning offshore fields and high oil prices have discouraged asset transactions

Two forces have been at work slowing up the asset transactions anticipated to come from the Fallow Field Initiative. One has been the high cost of decommissioning offshore fields and the other is high oil prices. High oil prices have made field owners reluctant to want to sell fields. On the other hand, buyers have been somewhat reluctant to step up in the face of high decommissioning costs. Another agreement between the DTI and the industry is to develop a plan to have a standardized formula for decommissioning costs of North Sea fields. At the present time, the estimate to decommission all the fields is between GBP 15 billion and GBP 19 billion. How these costs are allocated to each field has been cited as an impediment to successful deals.

Expectations are that the agreements coming from the Stewardship initiative should lead to even more fallow fields moving into the hands of more aggressive oil companies. A fixing of decommissioning costs should also help buyers in figuring their economics. These agreements could help extend the life of the North Sea, a significant resource that is important in the global oil supply equation.

More Capacity and Lower Prices Starting Next Year

CERA introduced a new study suggesting that in the latter part of 2006, oil production capacity growth will contribute to a weakening in oil prices sending them back towards \$35

The venerable energy consulting firm, Cambridge Energy Research Associates (CERA) introduced a new study suggesting that in the latter part of 2006, oil production capacity growth will contribute to a weakening in oil prices sending them back towards \$35 per barrel. Dr. Daniel Yergin, the head of CERA, said in a television interview that when you do a field by field analysis of production scheduled to come on stream by 2010, there will be an increase in capacity of 16 million b/d. That means, based on the current level of demand (84 million b/d), almost a 20% increase in supply. More important, even after factoring in the firm's demand growth over this period, the global supply cushion could grow to 6-7 million b/d. That margin of surplus production capacity would certainly lead to a weakening in oil prices.

The heads of three of the major oil companies have arrived at a different view

Based on its outlook, CERA believes that oil prices will remain above \$50 per barrel for the next four quarters before starting to fall in late 2006 toward \$35 per barrel. While CERA is offering this optimistic (for consumers) oil supply and price forecast, the heads of three of the major oil companies have arrived at a different view. Lord Browne, the chief executive of BP plc, said that prices could remain above \$40 per barrel for three to four years. Mr. Jeroen van der Veer, chief executive of Royal Dutch/Shell, said that sustained heavy investment in costly projects would require higher long-term prices than in recent years. The leading bullish oil company Chairman and CEO is Chevron's David O'Reilly. Recently he made the point that oil prices would remain high for some time to persuade investors that the industry is worth their time. Maybe he adopted this view because of his company's deal to buy Unocal, which is now being challenged by a competitive bid from China's CNOOC Ltd.

The most cautious oil company chief is ExxonMobil's (XOM-NYSE) Lee Raymond who cautions against embracing a new paradigm for the industry. "Where this cycle will end, we can all speculate on that, but I would suggest to you it will take a few years to sort out where it'll all end," Raymond told Reuters last week. Yet even with this conservative view, the ExxonMobil long-term energy outlook presentations have focused on the massive volume of new oil that needs to be discovered and developed in order to support global oil demand. In addition, ExxonMobil has emphasized how dependent it and the industry are on new technology to achieve these results.

The close correlation between Russian economic performance and the country's oil production points to flat to lower near-term oil production as economic activity continues to weaken

What we find interesting in the CERA announcement is that they are not relying on Russia playing a significant role in the incremental supply. That is interesting since Thane Gustafson of CERA, an expert on Russia, reportedly told oil executives in Houston recently that he is the most confused he has ever been about the outlook for the country. As we pointed out in our last *Musings From the Oil Patch*, the close correlation between Russian economic performance and the country's oil production points to flat to lower near-term oil production as economic activity continues to weaken. According to the interview with Gustafson on the CERA web site,

CERA expects OPEC production capacity to climb by 24% or from 36.8 million b/d in 2004 to 45.6 million b/d in 2010

Non-OPEC production capacity is forecast to grow by 15.5%

One wild card in the CERA forecast, as in any forecast, is the timing of the startup of new field developments

their base case outlook for Russian oil production is for a three percent increase this year to 9.4 million b/d, but then falling to 9.22 million b/d by the end of the decade.

So what is the supply challenge facing the world? When we look at CERA's number of 16 million b/d of incremental producing capacity, we know it will require finding and developing a substantially greater volume of reserves. If the generally accepted four percent depletion rate per year is applied to existing global crude oil production, then the industry needs to find an additional 16 million b/d of crude merely to sustain today's oil supply. Between the incremental new production and replacing depletion production, the industry must develop upwards of 32 million b/d of new reserves.

Where will the new supply come from to meet CERA's forecast? CERA expects OPEC production capacity to climb by 24%, or from 36.8 million b/d in 2004 to 45.6 million b/d in 2010. That is an average annual increase of 1.47 million b/d, which compares against the 525,000 b/d annual growth rate experienced in the first four years of the decade. Saudi Arabia will account for 1.5-2.0 million b/d of that total. Much of the remaining growth will come from West African countries where there is a string of new deepwater fields under development, planned or seeking approval.

Non-OPEC production capacity is forecast to grow by 15.5%. CERA expects an additional 7.5 million b/d of capacity boosting this group's total to 55.8 million b/d by 2010. The production increase is projected to come from the Caspian, Brazil, Angola and Canada. This optimistic outlook is tempered by CERA's assessment that the capacity growth could slow to as low as two million b/d between 2010 and 2020.

CERA forecasts that there will be approximately 20-30 new major fields (greater than 75,000 b/d of production) coming on stream every year to 2010. These new major fields will contribute between three and four million b/d of new capacity annually. Many of these fields are in West Africa with others in the Gulf of Mexico, Brazil and Asia/Pacific.

CERA's optimism appears out of the mainstream of current industry thinking. On the other hand, CERA's view reflects the historical record of the oil industry over-achieving just when everyone thinks it can't. However, the forecast appears extraordinarily bright for the near term, but considerably less optimistic beyond 2010. So are we merely witnessing CERA's view that the peak in oil production comes later than the peak dates projected by other forecasters? To us the CERA forecast is the opposite of the traditional 'over the horizon' view adopted by securities analysts when forecasting company earnings, i.e., things are bad as far as one can see, but over the horizon it's all blue skies and good times.

One wild card in the CERA forecast, as in any forecast, is the timing of the startup of new field developments. Supply always comes in discrete chunks, i.e., in a step pattern, never in a smooth flow, so

delay-related dislocations can cause a forecast to go awry. Additionally, supply and demand forecasts are always at risk for understating depletion that can sop up a greater amount of the projected new supply. Lastly, demand remains a huge wildcard that can distort a forecast's conclusions. As we analyzed last year, if just the middle classes of China and India stepped up their per capita oil consumption to the levels of South Korea and Brazil, respectively, the incremental demand would consume all the scheduled new deepwater production in West Africa through 2009.

We tend to agree with Lee Raymond's view that there is no new paradigm

In the end, all forecasts are designed to attempt to shed some new light on the trends impacting the development of a market. Given the nature of the global oil market with all the geopolitical and geophysical considerations, it is not surprising that we find a range of views about how tight the crude oil market will be for the foreseeable future. We are comfortable in holding to the view that the extended period of under-investment in energy and its infrastructure that occurred between 1982 and 2000 can only be reversed after an extended period of higher than comfortable commodity prices that will stimulate over-investment. We tend to agree with Lee Raymond's view that there is no new paradigm, but reaching a more normal (comfortable) market will take time – the duration of which is impossible to forecast.

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