

CANADA'S Energy Powerhouse



A Special Report From
Oil and Gas Investor
and Global Business Reports

Helping fuel global growth



**MAGNUM
HUNTER**
RESOURCES CORP.

\$327 million
Acquisition of
NuLoch Resources

Financial Advisor
May 2011

PXP

PLAINS EXPLORATION & PRODUCTION COMPANY

\$600 million
Senior Notes

Joint Bookrunner
March 2011



VENOCO, INC.

\$86 million
Follow-On Offering
Common Shares

Joint Bookrunner
February 2011

A | tinum

\$70 million
Marcellus Shale Joint Venture
with Gastar Exploration

Financial Advisor
November 2010



Paramount
resources ltd.

\$305 million
Senior Notes

Joint Bookrunner
November 2010



Crescent Point
ENERGY TRUST

\$363 million
Common Shares

Joint Bookrunner
October 2010



PENGROWTH

\$386 million
Acquisition of
Monterey Exploration Ltd.

Financial Advisor
September 2010



MEG Energy Corp.

\$678 million
Initial Public Offering
Common Shares

Joint Bookrunner
August 2010

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Canada's Energy Powerhouse

The nation's production is set to grow exponentially.

Ask the man on the street to name the world's energy powerhouses and Saudi Arabia, Kuwait, or maybe Venezuela and Nigeria will spring to his mind. Yet it is Canada that is host to the world's second-largest proven reserves of oil and is currently the third-largest gas exporter in the world. The United States' northern neighbor is its largest source of foreign hydrocarbons and, as the rising price of oil and new technology combine to create more economically recoverable oil, the nation's production is set to grow exponentially.

But size is not everything for the oil and gas investor. With 45% of the world's oil companies based in Canada, it's one of the best places in the world for private capital to gain exposure to hydrocarbons.

The "Alberta Advantage," as the province's unique mix of entrepreneurial culture and business-friendly legislation is known, makes the province, which is the core of Canada's hydrocarbons industry, one of the easiest and most attractive places to invest in oil and gas. As the executive director of the Small Explorers and Producers Association (SEPAC) of Canada, Gary Leach, observes: "The unique equity culture goes right back to the first oil boom in 1914 when the local government created the stock exchange and the securities commission to regulate it. This created a public equity investing culture that's supportive of risk taking and has fostered a sophisticated collective of executives in our junior and mid-sized companies."

While Alberta remains the nation's largest producer and Calgary retains its title as the undisputed capital of Canadian oil, other provinces have watched and learnt from "The Wild Rose Country," and the nation as a whole remains arguably the best place in the world to establish and build an E&P company.

Geology is understandably diverse in Canada, the world's second-largest country. The heart of the Canadian oil and gas scene is the Western Canadian Sedimentary Basin, which covers the bulk of Alberta, southern Saskatchewan and northern British Columbia. To the east there exist various smaller deposits, including large shale acreages in Quebec. Meanwhile, off the eastern coast, the vast Hibernia GBS platform pumps up to 66 million barrels of oil per annum.

In this special report on the Canadian oil and gas sector, we consider how the industry has dealt with the combination of the global economic crisis, the price collapse in gas and volatility in oil prices, and Alberta's royalty fiasco between 2007-2010, and examine how the sector is recovering to become one of the world's most significant oil and gas jurisdictions.

Resource potential

Prior to reviewing the industry, it is worth understanding Canada's reserve estimate legislation and how it compares to its American equivalent.

"In Canada, standards for reserve estimates are set by the securities regulators," states Robin Mann, CEO of oil and gas consultant



A pumpjack at Terrex Energy Inc.'s enhanced oil recovery project in the Strathmore oil pool, 60 kilometers southeast of Calgary.

AJM. "The Alberta Securities Commission (ASC) administers and promotes changes to NI (National Instrument), which is the standard accepted by the Canadian Securities Commission (CSA).

"Canadian regulators have recognized the guidelines and definitions established by the Canadian oil and gas Evaluation Handbook (COGEH). In the U.S., the SEC is the securities regulator and they have recently updated the definitions and rules for reserve reporting. In Canada, companies must report both proved and probable reserves with an option to report 3P, which includes possible reserves.

"In the U.S., proved reserve reporting is mandatory and reporting probable and possible reserves is optional," continues Mann. "The overall reserve definitions used in the U.S. are relatively similar to those we have in Canada. One difference relates to the levels of confidence for proved reserves, where Canadian guidelines call for high certainty while the U.S. calls for reasonable certainty.

"For reserve estimation, the rules throughout North America have really developed over the past eight years and they are more standardized today than they were in the past. This standardization makes it possible to deliver reports that can be comparable in terms of reserves both in Canada and the U.S."

In recent years, "resource estimates" have started creeping into Canadian E&Ps' investor presentations and press releases. Barry Ashton, AJM's chief operating officer, explains that unfortunately, the terms "reserve" and "resource" have often been intertwined: "Over the last few years, a big part of our business has been in preparing 'resource' reports. These reports are different from 'reserve' reports as resource reports deal with developments in the exploration or early development stages.

"When evaluating resources, we need to make sure that there is economic value in large, undrilled areas and we clearly understand the resource base. Resource studies help investors to better understand their portfolio and enable them to make the decisions that allow them to get the most value from their assets." ■

This report was prepared by Oliver Cushing, Caroline Stern and Angela Harmantas of Global Business Reports. For more information contact info@gbreports.com.

Alberta's Regime

A new royalty regime came into force in 2010.

In March of 2010, the Regulatory Enhancement Task Force was established in Alberta to perform a comprehensive upstream oil and gas regulatory review and recommend system level reforms. As a result, a new royalty's regime came into force in 2010.

In late 2007, Alberta's Premier, Ed Stelmach, responded to the findings of an independent royalty review panel and dramatically increased royalty rates in the province. The maximum royalty rate for oil and gas was increased from 35% to 50% effective Jan. 1, 2009. Stelmach predicted that royalty review would result in the province's royalty take increasing 20% in 2010. As the world economy headed into meltdown, oil prices fell to the \$40 mark and the price of North American gas sharply declined. The province's take from oil and gas plummeted.

Macro economic factors clearly contributed to the fall in oil and gas revenues, but it rapidly became apparent that the province had shot itself in the foot. As the industry predicted, capital fled to more friendly regimes. In Canada, the provinces own the bulk of mineral rights and allocate them via land auctions. Revenue from the auctions plummeted, and the government quickly started to introduce temporary measures to encourage investment.

When you quiz those in the industry about the royalty review, the reaction is universal. To quote just one E&P CEO, Bellamont Exploration's Steve Moran: "They should not have messed with something that was already working."

Amidst increasing criticism and a rapidly mounting provincial budget deficit, the government initially attempted to undo its mis-

take without undertaking a comprehensive review (which would have been an admission of failure). However, by early 2010 it was clear that sticking plaster measures were not providing investors with sufficient confidence and that the province had to undertake a comprehensive review in order to reduce royalty rates and send a clear message to the oil and gas world that Alberta was open for business again.

When undertaking the 2010 Competitiveness Review, the provincial government made a conscious decision to fully consult with industry, in marked contrast to 2007. "I think the government eventually reached the conclusion that the analysis they went through was flawed," says SEPAC's Gary Leach. "We spent time with our association and the senior producers of Canadian Association of Petroleum Producers (CAPP) putting forward solutions and proposals, which included the design of a royalty framework for resource opportunities."

On the topic of the 2007 review, Alberta Minister of Energy Ron Liepert observes: "You can argue all day about whether it was the correct panel or not, but the government tried to find a happy medium between the recommendations and the old regime."

Liepert, a straight talker who took up his portfolio after the 2007 review, adds, "The (2010) report received strong support from the industry and we implemented the proposed fiscal regime. There has been virtually no negative public reaction."

The new regime is complex. For conventionally produced oil, a sliding royalty scale is applied according to the WTI price, the top



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royalty bracket has been reduced from 50% to 40%, and downward adjustments have been made in royalties throughout the curve. A wide range of discounts are available in the early stages of production and for longer wells. In addition, the province makes allowance for the additional cost of EOR and offers a lower royalty rate on oil recovered using more novel techniques.

Recognizing the challenge that gas operators face making the economics of new wells stack up in today's price environment, Alberta has taken a knife to royalty rates for gas. As in oil, Alberta operates a sliding scale subject to the price of gas in North America. The top royalty bracket has been cut from 50% to 36% for both conventionally and unconventionally produced gas, and rates have been reduced throughout the spectrum.

The complexity of the new system is a source of concern for some. "Simple is always best," explains Chad Dust, lead director of junior E&P PetroSands. "The system is quite confusing. How you make it less so is to keep things the same. Royalties exist everywhere, but the less political and simpler you can make them for investors, the better."

Says David Collyer, president of the Canadian Association of Petroleum Producers, "We have come a long way from where we were two or three years ago with the royalty changes. We've made some significant strides in working with the government, and they've realized the impact of investment in light of the changes that were made."

While the industry seems happy with the new regime (and some E&P execs privately suggest that the new regime might be overly generous to the private sector), there is a feeling that it will take some time to rebuild the province's reputation. "I think it'll take a little while for the Alberta government to win back trust," states Owen Pinell, CEO of Anterra Energy. "People in the U.S still see the royalty change as a risk."

Alberta also faces a challenge in ensuring that its permitting process is speedy and environmental legislation is reasonable. Waiting times for approvals continue to be frustrating in Alberta. "You can't take two years to make a decision because you invite politics into what should be an economic decision," says PetroSand's Dust. "What they've effectively done by instituting longer lead times in these capital-intensive projects is to ensure that the small companies can't play."

Adds John Wright, CEO of Petrobank Energy and Resources Ltd., "Any bureaucratic venture comes at the expense of entrepreneurship unless there is very clear leadership at the top saying how things need to be done, and Alberta has lost its way."

Petrobank, a pioneer in the in-situ oil-sands field, has trial projects for its Toe-to-Heal Air Injection (THAI) process in both Alberta and Saskatchewan. "We put in place plans to commercialize our Kerrobert project and the regulators in Saskatchewan approved

our project very quickly. We now have two full-time rigs in Kerrobert and are drilling up a 7,000-barrels-of-oil-equivalent-per-day (BOE/d) commercial project. In Alberta we are still in the third year of waiting for regulatory approval."

Saskatchewan's Straightforward Structure

Saskatchewan recognized the opportunity presented by Alberta's 2007 debacle. Understanding the mobility of oil and gas capital, Alberta's eastern neighbor created a royalty window for new wells and heavily promoted itself as a business friendly jurisdiction.

Kim Davies, CEO of enhanced oil recovery (EOR) junior Terrex Energy, notes, "Saskatchewan is very straightforward." The province charges 1% before payout and 20% net operating income after payout, which is achieved when there has been cash recovery of eligible capital costs and expenses.

Alberta's premise, with its sliding scales, is more complicated. "There's a before-payout royalty and an after-payout royalty," says Davies. "It can be quite a range depending on the pool, so Saskatchewan remains more attractive at this point."

While Saskatchewan's regulatory and royalty structure attracts near universal acclaim from Canadian E&P execs, it would seem that the province's systems for authorizing new wells may be struggling to keep up with the recent upswing in demand. "Saskatchewan is building their system so they're just trying to catch up with the backlog created by recent activity level increases," states Bruce Beynon, VP exploration of Saskatchewan Viking-focused junior Compass Petroleum.

"It's only been in the last few years that plays have been occurring in Saskatchewan and they're doing a bit of a catch-up," agrees Compass CEO Yook Mah.

"In some respects it's easier to operate in Saskatchewan, but in other regards their systems aren't as sophisticated. I'm not sure they're equipped to handle the volume of drilling activity that's happened in the last year or two."

A far higher proportion of prospective mineral rights in Saskatchewan are privately held and the process of building a land position would probably be more familiar to a 19th century oil pioneer such as Rockefeller than the modern E&P exec.

Hugh Ross, CEO of junior Novus Energy, has built the second-largest land bank in the Saskatchewan Viking. "We did a ton of deals in the local Kindersley coffee shop. A lot of our geologists and engineers are from Kindersley, so we put a lot of money into the community to get our name out there. We'd buy our land directly from the farmers who owned it and give them shares as well, and they've now doubled or tripled their money."

"So now they're telling their friends, and we have people calling us wanting to show us their land... For us to move in and within a year be the second-biggest landowner, it puts the bigger guys to shame." ■

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The logo features the word "REAL" in large, white, bold, sans-serif capital letters. Below it, the word "energy." is written in a smaller, yellow, lowercase, sans-serif font. The text is set against a dark green rectangular background. This green background is framed by a blue border on the top and left sides, and a yellow border on the right and bottom sides, which tapers to a point at the bottom center, resembling a speech bubble.

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Q&A: Alberta's Entrepreneurial Spirit

In an interview, Ron Liepert, Alberta's minister of energy, discusses the province's fiscal regime and strategies for growth.

What were the manifesto commitments of this government in relation to the oil and gas sector and what has it achieved as we approach the midway point of your term?

Alberta is unique in that the crown (the government) does not play a role in resource development. The province has been built on foreign investment and we continue to have an open marketplace. We happen to sit on what could be the largest oil reserves in the world. Currently our proven reserves are 170 billion barrels in the oil sands, though this is believed to be only one tenth of the actual oil in place, as that represents the only portion of the oil that, with today's technology, can be extracted. It is likely that new technology will change this situation, and if the figure was moved from 10% to 20%, for example, Alberta would become the largest oil jurisdiction in the world.

There are no signs that the world is getting off of oil yet. There is a growing recognition that we need to rely more on renewable energy resources and cleaner burning technology, but it is clear that oil will remain a dominant source of energy for many years to come. In Alberta we have a very open investment climate with assets owned by various wings of the Chinese government, Korean, European and American companies. We have always felt that we are open for business. As a government we try to put in place a fiscal regime that is competitive and encourages investment. We had to make some changes in spring 2010, which I feel have been well received by industry.

Why did you chose to lower royalties in the spring of 2010 and what do you as a party hope to achieve?

To understand the situation you need to look at the background. We had a leadership race in the Progressive Conservative Party in 2006, when we also had what I would describe as an outdated fiscal regime for the oil sands. In order to encourage investment in the oil sands, the royalties had been fixed as an upfront fee of 1%. Many Albertans did not understand the difference between this rate and the royalties levied for conventional oil.

We appointed a panel to review the rates and it came back recommending significant increases. You can argue all day about if this was the correct panel or not, but the government tried to find a happy medium between the recommendations and the old regime. The new regime came into place in 2008, just as the global economic crisis started. Investment went elsewhere and we were not doing well. I don't know how else to describe it. My predecessor implemented a competitiveness review in mid-2009 recognizing that there are a whole range of factors that affect investment decisions. The report received strong support from the industry and we implemented the proposed fiscal regime. There has been virtually no public negative reaction. Land sales in this calendar year have set an all-time record, and our drilling numbers are double those of the previous year.

How do you as, one of the prime regulators of the oil industry,



"As a government, we try to put in place a fiscal regime that is competitive and encourages investment," says Ron Liepert, Alberta's energy minister.

ensure responsible environmental management in the sector and help convey that message to the public?

It is very difficult to get an accurate message out about the industry, although we are doing better than we were a year ago. We have recognized that we do need to do a better job and have put in place the most stringent environmental regulations in the world that relate to oil sands. All mining operations are dirty, and there needs to be an improvement in the development of technology.

We live in a communications world today of 10-second sound bites, where phrases like "dirty oil" and "catastrophe" stick in people's minds, but the 10-minute explanations we give do not. There is a comprehensive campaign in place now to tell our message and we want to ensure that people know the facts. Nobody is denying that there are open-pit mines, but there is a whole area of good news that is not being told.

How is the government supporting investment through the value chain and the creation of jobs in the oil sector?

One of the messages that we try to communicate is that it is not just Alberta that benefits from the development of the oil sands. We do not manufacture most of the capital equipment in Alberta, it comes from around the world and the proposed Keystone pipeline in the south of the U.S. will be American jobs. A lot of people in the manufacturing industry do not know where the parts are going, so again, we need to increase awareness.

The one area that we are struggling with is the area of value addition and taking a raw product and upgrading it to whatever level is required and doing it here at home. A number of years ago, this province embarked on some innovative mechanisms to ensure that we built, for example, a better chemical industry and that has worked well over the last 30 years. We are now at the same stage of development and are discussing enhancing the oil sands and the value add for Albertans. We have implemented a similar policy relative to raw bitumen. We are currently in the process of finalizing talks with a company that is proposing to build an upgrader and we would supply 75,000 barrels a day, which would upgrade in diesel fuel. That is a pilot project, and I think this will give us a template to move forward.

What is your final message to our readers about Alberta and its oil industry?

There are not many places in the world where there are both viable reserves and a climate that welcomes foreign private capital. Here in Alberta, we are part of a country that has strong human rights values and strong environmental regulations and a stable democratic government. We have put in place a fiscal regime that benefits Albertans and recognizes that the private sector needs to make a profit. Nowhere else in the oil world has a greater entrepreneurial spirit than Alberta. The thousands of junior oil and gas companies that have emerged from this province are testament to that spirit. ■

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The Oil Sands And Heavy Oil

Soaring oil prices draw attention to Alberta's reserves.

With crude oil hovering near US\$100 per barrel and light oil reserves depleting, the oil sands and heavy oil in the WCSB have become increasingly attractive to the energy investor.

Heavy oil is, by definition, any oil having an API gravity of less than 22.3 degrees, making it highly viscous and difficult to extract using conventional methods. Some 97% of Canada's oil reserves are heavy, the bulk of which is trapped in the oil sands. Conventional heavy oil production forms a significant proportion of Canada's current oil output.

Oil sands comprise water-logged clay and sand laden with heavy oil. The oil sands of northern Alberta and western Saskatchewan are believed to be the result of oil seeping from southern Alberta, pushed by the same tectonic forces that created the Rockies. Estimated to contain between 1.7 and 2.5 trillion barrels of oil, the oil sands are the world's largest known agglomeration of oil.

The oil seeps to the surface at points and is often exposed in river banks. The oil sands were first discovered by the indigenous peoples of the Athabasca region. Later, early European travelers recorded the presence of unusual tar-like substances in the area. The challenge of finding a method to extract the oil from its burden was met relatively early. In the 1920s, Dr. Karl Clark invented the hot water separation method that still forms the basis of most modern extraction processes. But it took rising oil prices, further tinkering and substantial support from the Alberta government before the

oil sands could be exploited for commercial gain.

The province's main oil sands reserves are found in three main areas: Athabasca, Cold Lake and Peace River. In total around 1.4 million barrels are produced each day, with production expected to grow to 3.5 million barrels a day by 2025.

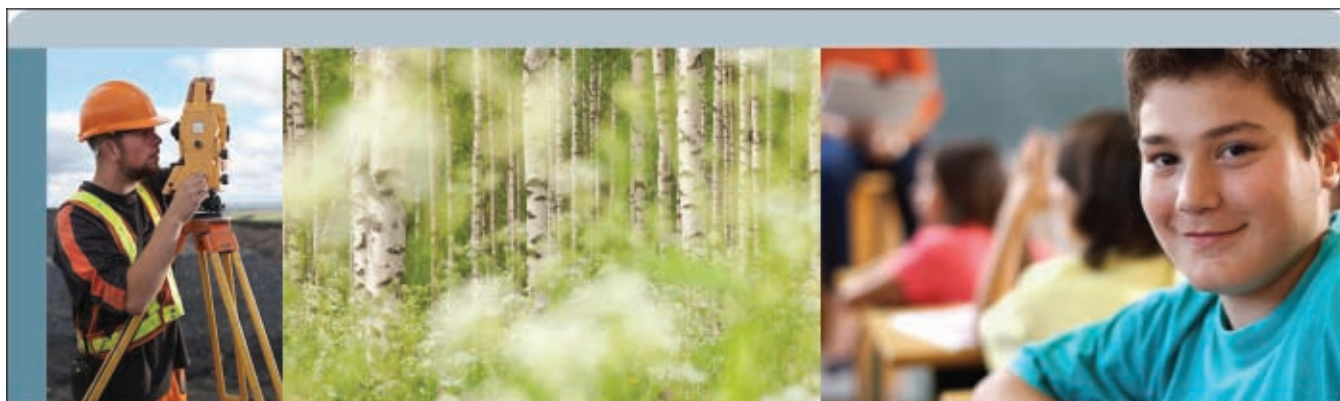
The first oil sands operations employed open cast mining techniques to get at the prize, and it is these mines that have become, for better or worse, the poster image of the Canadian oil and gas sector.

In-situ: More than just mining

Today, just over half of oil sands production comes from these mines but, going forward, in-situ, or 'in place' extraction methods, will account for 80% of production. The belief that open cast mining *is* the oil sands underlines a common misperception surrounding the oil sands. As Richard Gusella, president and CEO of in-situ oil sands producer Connacher Oil and Gas, puts it: "Not all oil sands are created equally... In fact, within a given accumulation, every well is created differently and must be treated as such. It's like your kids."



Richard Gusella, president and CEO, Connacher Oil and Gas



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Shabir Premji, executive chairman of Alberta Oilsands Inc.

"When oil is close to the surface, it's cheaper and more efficient to strip mine," explains Gusella. "You can also recover virtually 100% of the reserves. But when you're down below the surface and the depth precludes the application of mining, you have to look at other ways of getting oil out of the ground. That's where SAGD or other in-situ applications start to emerge."

"The trick with heavy oil is heating it to make it flow better," says John Wright, president and CEO of Petrobank Energy and Resources.

Steam Assisted Gravity Drainage (SAGD) is an enhanced recovery method to extract heavy oil using steam stimulation. The process involves drilling two horizontal wells at different depths. One well injects steam into the reservoir to reduce the viscosity of the heavy crude oil or bitumen. The air drives a process of combustion underground which separates the oil from its burden and evacuates the oil through the second well. The other, lower well, collects the oil and bitumen that flows out of the formation. SAGD is the newer, more effective version of regular steam flooding techniques and Cyclic Steam Stimulation (CSS).

The in-situ oil sands sector is characterized by a group of larger, often privately held, juniors, who develop proprietary technology to help them gain an advantage in the oil sands. Amongst them the race is on to improve upon SAGD.

"The heavy oil industry has been around for a long time and there have been many technological improvements since the 1970s and '80s," says Barry Lappin, president of the Canadian Heavy Oil Association. "We have international investors that are interested in bringing this technology to Asia that are coming here to learn."

Wright recognizes that "ours is a business of creative destruction and of technological advances...one of the reasons why there are huge accumulations of (heavy oil) is because it won't go anywhere unless you give it some energy to mobilize."

The principle with heavy oil and the oil sands has been that "you put a lot of energy into the ground and get a lot of oil out," in the words of Wright. "The pace of develop-

ment has been fast in recent years: When we came along...SAGD...was just into its commercial phase and now they are planning to produce 1million BOE per day with it in Alberta."

Petrobank's proprietary THAI process offers its own benefits: "THAI removes the whole process of generating steam, so it is more efficient from an energy perspective. Another advantage is that, by duplicating some of the conditions in a refinery, we create a partial upgrading of the oil and it comes out of the ground at a much higher quality than its original, crude state," continues Wright.

"We are not burning natural gas, which lowers our operating costs and because of this our surface footprint is much smaller. Our extraction rate is higher because we can sweep the fire through the reservoir at a much higher temperature, which means that recovery rates are twice as much as you would get from other technology."

The THAI process produces less CO₂ compared to SAGD, though Wright comments: "That wasn't our main goal. We wanted more oil out of the ground, for less cost and a higher sales price. It just so happens that we have lower CO₂ emissions. The CO₂ thing is a bit of a throw-in. It is an attractive thing for investors, but at the end of the day, it's like a tobacco producer saying his cigarettes cause less cancer."

Heat, typically generated by gas, represents the largest chunk of the cost that makes in-situ heavy oil more expensive to produce than light oil. Reducing energy consumption should therefore improve the economics of an operation as well as reducing GHG emissions. Laricina Energy, one of the largest privately held companies working the oil sands, is combining solvents with SAGD to further enhance recovery. "SC-SAGD has the elegance that you see in a hybrid car. It's a SAGD like any other, but with another 'engine'—in this case, propane," explains Laricina CEO Greg Schmidt. "Because of its characteristics, propane leaves less oil behind."

"SC-SAGD uses the same facilities, well pairs and pumping equipment, but it's an enhancement," adds Schmidt. "That's what allows the commercialization to proceed in a timely way... If I can get the same amount of oil using less steam and water, it's more efficient and my costs per barrel of production are lower."

"Because my wells also produce more oil and at greater rates, I end up with better economics...The enhancement of the solvents means that we can measure our carbon footprint very close to those of average oil imports (from outside North America)."

When it comes to extracting conventional heavy oil, the Canadians' lead in innovation and many of the techniques being developed for in-situ oil sands applications can be transferred across to extracting conventional crude, and vice-versa.

Connacher's early innovation was driven by a desire to improve production rates and drive down the amount of water

being extracted along with the oil. "The reservoir was conventional heavy oil that would flow cold, about 13 API," explains Gusella. "The problem with cold production was that you had gas over oil over water, and water would produce preferentially, so the oil was assigned a very low recovery factor.

"We had to figure out how to get oil without water producing preferentially," he adds. "We initiated an experimental project, which was the first horizontal well into a conventional heavy oil basin. That turned out to be a great success. It was a significant precursor to what's going on in the oil sands right now and also in other aspects of the heavy oil business throughout Canada and the world. We thought that if we could be this successful in heavy oil then why not apply it to other areas as well?"

Connacher has continued to find new methods to tackle its assets, including being the first company in the world to install high-temperature down-hole pumps in a heavy oil well with the intention of further reducing the steam-to-oil ratio.

Using the Cold Heavy Oil Production with Sand method (CHOPS), Baytex Energy Corp. has been able to keep costs low. "It's low cost because there is no fracturing required," says Anthony Marino, CEO of Baytex, a heavy oil producer in Saskatchewan and Alberta. "It's mostly cold production, not even any steaming."

The company uses horizontal cold wells that don't require any mining or heating. "We've had a 100% success rate and successful wells," Marino continues. "The configuration is one of multi-lateral wells with very high efficiency. We have thermal recovery tested at two different levels. There are very low steam ratios and so we use less fuel and save costs there."

Adds CHOA's Lappin, "Through new technologies we are starting to see collaborations amongst producers to pool technology and ideas. There is a lot of research that is being done."

Developing the oil sands

Despite the widespread, successful use of SAGD over more than a decade, E&Ps must often educate both investors and the public about in-situ extraction in general, on top of their own, specific projects.

Alberta Oilsands Inc. owns 140 net sections of oil sands leases in the heart of the Athabasca oil sands, including land adjacent to the town of Fort McMurray. "Fort Mc," as it is affectionately known, is at the center of the oil sands industry and counts amongst the most pro-oil cities in the world.

Even in the heart of the Canadian oil patch, stakeholders need to be communicated with effectively. "There is a lot of confusion out there," states Shabir Premji, executive chairman of Alberta Oilsands Inc. "People do not understand SAGD technology, which has a tiny footprint compared to mining."

Alberta Oilsands Inc.'s most advanced project, Clear Water, is adjacent to the local airport and close to the city, so public recognition and understanding are fundamental for its progress.

The economics of the project look attractive, with a pay zone that is around 45m thick with very few laminations, no water and its own infrastructure. The project's first phase will produce 10,000 barrels per day (bbl/day) with a second phase potentially boosting production to the 25,000 bbl/day mark. The addition of solvent into the SAGD process should help lower the steam-to-water ratio substantially.

"When you look at our Clear Water asset, you can see that our pay zone vents into the Clear Water River because it has cut through the bitumen. However, we are steaming nowhere near the river and operating at low pressures. There is no way that the steam could travel that far. We are a shallow reservoir and Suncor has been producing from similar depths for 10 years. We are not drilling under the airport, we are adjacent to the airport and we were told that the project is a non-starter unless they were convinced that it could be operated safely."

Alberta Oilsands Inc. has taken a progressive approach to enfranchise key stakeholders. "Although we are going to be paying royalties to the government of Alberta, we have entered into a gross over-riding royalty agreement with the airport," explains Premji, who considers them a major stakeholder. Premji mentions the benefits for the airport, which "wants to expand their facilities, but



THE FUTURE OF OIL SANDS

The future of oil sands development is not in trucks and shovels, open pit mines or tailings ponds. It is in the drilling of horizontal wells deep below the earth's surface to minimize land disturbance. It is in processes that use non-drinkable water and aim to recycle 90% of it. It is in the application of new technologies to reduce emissions and which allows for the co-existence of natural ecosystems.

We are the In Situ Oil Sands Alliance (IOSA) - a group of independent oil companies dedicated to the development of Canada's oil sands using in situ technologies.

IOSA's members are preparing North Americans for a secure, responsible and innovative energy future.



IOSA - OUR FUTURE IS ENERGY

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- Privately Held Company headquartered in Calgary, Alberta

- Largest non-partnered in situ oil sands land position in the Athabasca region (no mining of resources)

- Focused on 3 initiatives:

- *Conventional Heavy Oil*
- *Cretaceous Sandstone*
- *Carbonates*

- Controls 7% (1,153,600 acres) of Athabasca region oil sands leases.

- 43.8 billion barrels of petroleum initially in place

- 2.2 billion barrels best case contingent resource with a PV10% value of CDN. \$3.1 billion

- 70 million barrels of 3P reserves with a PV10% value of CDN. \$209 million

- Experienced and reputable senior management team with a proven track record

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do not have any direct funding. At \$80 oil they will receive some \$150 million in royalties over a 30-year period.”

Interested parties are being won over by the commitments and procedures Alberta Oilsands Inc. has put in place to ensure safety at Clear Water. “The systems that we are bringing in are the most sophisticated systems to be found. The plant will be one of the greenest plants around and will provide employment for people who are able to stay at home and work instead of commuting for miles.”

Oil sands are a longer-term play than most conventional oil and gas investment opportunities. While most resources are known, delineating a specific development can take many years and be extremely capital intensive.

“This is a great industry but, just like any other industry’s megaprojects, it’s not very good at cost control,” says Gusella of Con-nacher. “We had to be very efficient with our use of capital.”

All things being equal, netbacks on oil sands are lower than for conventional oil and until recently, it has taken considerable nerve for anyone other than the majors to expose themselves to this asset class. However, pioneers who got in early have been rewarded. As Harvest Energy CEO John Zahary, whose asset base includes 42,000 acres of oil sands leases in northwestern Alberta, puts it: “We got into it because everyone else got out of it! The safest thing [at the time] was to have a natural gas strategy but we decided not to go down that route.”

Scalability is key with oil sands projects, and some juniors have managed to assemble large land positions to this end. Sunshine Oil Sands, a privately held junior, has managed to build a large portfolio in a matter of years. “Sunshine was formed in February 2007 and started off with four sections and has grown to over 1,800 sections today,” relates co-CEO John Kowal.

“We have...almost 1.2 million acres,” continues Kowal, “which represents about 7% of all of the leases that have been allocated in the Athabasca oil sands region. We have 100% ownership and operatorship of those lands and our latest independent resource report has allocated us 43.8 billion barrels of petroleum initially in place, 2.2 billion barrels of best case contingent and 54 billion barrels of 2P reserves.”

Sunshine managed to assemble its land position the old-fashioned way, and Kowal explains: “All of our lands were purchased through land sales so there were no corporate deals or acquisitions...As more delineation was carried out in the area and resources assigned, companies realized the values inferred in our areas and subsequently numerous companies participated in a land rush.”

“If you’re looking for long-term, stable investments, the in-situ oil sands side of the equation is probably a good bet. Some 80% of the oil extracted from the oil sands will be extracted using in-situ processes and the oil sands represent 97% of Canada’s 175 bil-

lion barrels of reserves,” argues Pat Nelson, vice chair of the newly formed In Situ Oil Sands Alliance (IOSA). Nelson cautions, however, that the resource requires “patient capital.”

Canada’s controversy

Without doubt, the oil sands are Canada’s most controversial resource. Disturbance caused by open pit mines and the assumption that oil sands oil has a high carbon foot print make this one of Canada’s bug bears on the international stage. Canada is of course one of the few major hydrocarbon jurisdictions in the democratic world, and whatever the rights and wrongs, it’s a lot easier to campaign against the Canadian oil sands than it is against Venezuela’s heavy oil operations.

Working to reduce the environmental footprint of oil sands oil and doing a better job at educating the world about it are key challenges for the industry.

It takes about 1,200 cubic feet of natural gas to produce one barrel of bitumen from in-situ projects and about 700 cubic feet for integrated projects. Currently, the oil sands industry uses about 700 million cubic feet per day of purchased gas, or about 5% of the Western Canadian Sedimentary Basin’s production.

“We are looking to reduce the impacts on water and reduce the costs so that companies will become more efficient,” Lappin explains. “There are a lot of new technologies on the in-situ side and there are a lot of different approaches that are being commercialized, such as combustion technologies and electrical heating, all of which are being evaluated for their environmental impacts.”

Environmentalists groups in Canada and abroad have long decried oil sands production and the resulting carbon emissions, something that has resonated with the average North American. “The public’s opinion has been largely fueled by the media, which has been largely fueled by the more sensationalistic tactics employed by the environmentalist movement,” says Marcel Coutou, president and CEO of Canadian Oil Sands (the largest shareholder in oil sands giant Syncrude) whose projects are based in the Athabasca region. “We have done a lot of polling, which suggests that support for the oil sands is much broader in Canada and the U.S. than you would expect.

“Oil sands only produce a million and a half BOE per day, or less than 2% of global production, and its contribution to CO₂ globally is a mere fraction of the CO₂ produced across the world. Why we became the icon [of the environmental movement] has more to do with the visual nature of our operations and the freedom to criticize in our democratic jurisdiction.”

Chris Seasons, president of the Canadian division of Devon Energy and exiting chairman of the Canadian Association of Petroleum Producers (CAPP), notes: “We have a good track record on the environmental and social side of things and can stand up quite nicely against concerns re-

garding 'dirty oil.' With [their flagship in-situ project] Jackfish, we use no fresh water and we're between one-thirtieth and one-one-hundredth of the impact on the boreal forest, per barrel of oil produced, as compared to conventional oil.

"I am personally convinced that as a company we will get our greenhouse emissions down to being comparable to other alternative sources of energy in the not-too-distant future. First off, we wanted to make sure we could build a plant to be safe, environmentally friendly and efficient; secondly we wanted to be able to operate it; and now we are looking at how to enhance those operations to bring down emissions and increase our energy efficiency."

Devon is an in-situ operator with no open pit operations, but Seasons notes that "nobody likes to look at an image of an open pit mine. The difference in our industry is that our open pits have to be reclaimed. New technology has recently come about for tailing pond reduction and recovery and in 30 to 50 years you won't even notice these things existed. People in the industry are passionate about doing the right thing."

Tailings ponds are probably the second-most significant challenge facing the oil sands operators, after GHG emissions. Disposing of tailings, mining waste typically left to settle in large ponds, is tough. "There are large areas of land that haven't been reclaimed yet and a lot of that is tailing for which we do not yet have a quick reclamation solution. We worked with Suncor to help reclaim one of their ponds. It is a landmark project that has justified the concept," states Joe Aiello, managing director and president of energy and mining consultants Norwest Corp.

"The challenges are just beginning now as the regulators are saying that there needs to be a compressed time frame between the generation of tailings and final reclamation. But we're seeing a lot more cooperation between various operators because this isn't a



Joe Aiello, managing director and president, Norwest Corp.

competitive endeavor; it's in the interest of the sustainability of the industry."

"We've joined with six other companies to do some work on tailings innovation on behalf of the industry. It's a big issue that won't be solved overnight and there won't be one single solution, but there is certainly a willingness to identify the alternatives and put them into practice. We can't just keep doing what we've been doing for the last 50 years."

"There's been a negative press index overriding this industry since we started to expand our involvement in 2006," says Gusella of Con-nacher. Combating it, he says, is an "evolutionary process."

Despite the negative images of the industry, bitumen is a sector in which Canadians are global leaders and those in the sector are proud of their expertise and position. "I don't think we as Canadians have to hang our head in any way, shape, or form," says Gusella.

"I have guys whose backgrounds are entirely in heavy oil and steam technologies and bitumen is the hardest thing we've had to deal with," he adds, speaking about the technological achievement that oil sands extraction represents."

In recent years, the industry has recognized that it needs to put its side of the story in front of the public if it is to stand any hope of dealing with the barrage of anti-oil sands propaganda in the general media.

"The misconception is an industry problem that we allowed to develop by not communicating properly with the public," believes Howard Lutley, CEO of the newly formed heavy oil junior, Silver-birch Energy. "In the last 18 months the industry has worked hard to change that perception. Headlines shouted that an area the size of Florida was being destroyed, but the reality is that the total disturbed area of the oil sands is one tenth the size of Toronto. The industry just chuckled about [these inaccuracies] but didn't say

EVERYONE IS LOOKING AT SASKATCHEWAN

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anything, and so the perceptions became real. Now we're finding that we are finally getting [a more accurate] message to opinion leaders."

Governmental and public attitudes toward heavy oil have the potential to impact investor sentiment. However, Lutley states: "There's a real understanding of the oil sands amongst investors and regulators of both the positive and negative aspects of the industry... I think that there's recognition amongst investors that the government has decided that oil sands operations have to go ahead one way or another."

Leadership on the environment

While the oil sands have been heavily criticized by many in North America, it's important to recognize the leadership position that Alberta, home of the oil sands, has taken on the environment. "One of the things that's unique about Alberta is that we're the only jurisdiction in North America that's recognized carbon and has a requirement for reduction," insists the IOSA's Nelson, a veteran of Alberta politics. "We have a tax on carbon. The money that's collected goes into a fund used to develop green technology... I don't think that it would be a stretch to say that Alberta has the most rigid and stringent regulatory regime in North America."

In Alberta, open cast oils sands operations fall under the jurisdiction of the province's mining laws. The industry seems to be comfortable with them in both principle and practice. "The mining regulatory process is quite predictable," reckons Silverbirch's Lutley. "No mine has been disallowed. Every year the regulatory requirements get tighter, which is the nature of the business. We sit on the committees that help draft regulations so we're familiar with what's coming. We're fortunate with our Frontier mine because it was designed after the new directive came, so we've gone directly to a new dry-tailings process, whereas other operators have had to retrofit or change their plans halfway through."

Dealing with the heavy discount

Heavy oil commands a lower price in the market than its lighter cousin. The price differential is a result not just of the lower net value of the products that can be extracted from a typical barrel of heavy oil when compared to that of light oil, but also a reflection of the cost of refining and constraints in North America's heavy oil refining capability.

John Brannan, executive VP and COO of newly formed C\$27-billion heavy oil company Cenovus, observes, "The development of heavy oil has traditionally been constrained by the light-heavy oil differential and the impact that this has on the economics. When we contemplated the developments at Foster Creek and Christina Lake, the light-heavy differential was running at 30% to 40% and there was a lot of volatility in the market.

"Our board of directors told us to find a downstream solution that takes the light-heavy differential out of the economical equation. The obvious route is to have exposure to both production and refining."

Three years ago, Encana (which spun out Cenovus) entered into a joint venture with Conoco Phillips to gain exposure to significant refinery capacity. Cenovus inherited the deal. The differential has narrowed, and Brannan says, "The heavy-light differential will stay low and gas prices will stay low, hence we will be in a strong position...we have no further investment planned in the downstream side, yet we are continuing to move forward on the upstream, so after 2012 we will conceptually be long bitumen."

With factions in the U.S. aligning to prevent the construction of new pipelines to ship Canadian bitumen to Gulf Coast heavy oil refineries and limited capacity to ship synthetic crude oil (upgraded from heavy oil and bitumen in Canada), the nation risks having its most significant natural resource land locked away from market. Expanding upgrading and refinery capacity in-country would allow Canada to produce high value products which are less reliant on U.S. transportation capacity.

A first step in this process will be North West Upgrading Inc.'s integrated 150,000-bbl/day upgrader and refinery. The NWU project will be the world's first integrated upgrader and refinery, another indication of the leadership position that Canada has

achieved in the world of heavy oil. The project has the potential to revolutionize the image of Canadian oil since, as NWU chairman, Ian MacGregor, puts it, "You can go further on a ton of CO₂ with fuel from our process than on any other oil in the world."

The NWU team decided to engineer for efficiency from the outset: "We want to have a minimum environmental footprint for this facility," states MacGregor. "At present, bitumen is heated for upgrading and then reheated for refining; by integrating the two stages we reduce the amount of energy required substantially. By going to fuels in one step we'll be able to reduce the environmental impact and have a much broader market access than synthetic."

Not satisfied with reducing its carbon footprint through integration alone, and conscious of the fact that Alberta is the only jurisdiction in North America to tax carbon, NWU has gone one step further. MacGregor explains: "We made the decision to configure the process to produce pure CO₂, which is very unusual. We also started a business called Enhance Energy to develop an EOR project. Enhance is building the Alberta Carbon Trunk Line to take our CO₂ and deliver it to their EOR site as well as to other clients."

Saskatchewan's sands

Until now, the oil sands have been intrinsically associated with Alberta; however, it has long been known that the formation extends into western Saskatchewan. Now, pioneer companies are starting to demonstrate that recovery across the border might be commercially viable.

"Initially, there was a lot of skepticism from investors about the Saskatchewan oil sands, largely because of the lack of infrastructure in the region in terms of roads, pipelines and power lines," says Garth Wong, president and CEO of Oilsands Quest, one of the first companies in the Saskatchewan oil sands. "But, as interest grows in the eastern edge of the oil sands basin, with other companies exploring and developing in the area, we have seen the market warming to us."

Oilsands Quest has drilled out and delineated three large reserves on either side of the Alberta/Saskatchewan border. "While Shell had drilled a few wells 30 to 40 years ago, the area was largely unexplored. We've found large, rich in-situ oil sands reservoirs with unusually large sand grains, which means good porosity and permeability. With five years of detailed technical work behind us, we now have three potential SAGD oil sands projects of 30,000 to

Oil sands player SilverBirch Energy's rig at dusk in northern Alberta.





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35,000 bbl/day each—Axe Lake, Wallace Creek and Raven Ridge.”

Underlining the fact that oil sands developments are typically more complex than their conventional cousins, Wong notes: “Every in-situ oil sands reservoir is unique...We started testing at our first potential commercial oil sands site at Axe Lake in the fall of 2009.

“Axe Lake has an excellent reservoir, but the cap rock above the reservoir is different than oil sands projects further west. We ran lab tests on the cap rock to ensure that it can contain steam, which is essential for a SAGD project. Those results were very positive, and the next step is to run a SAGD pilot project to test the lab findings in the ground. Our surface facilities are in place for the pilot.”

Across the border in Alberta, things are also progressing: “We just finished a five-well drilling program in Wallace Creek. The results are promising. We see a lot of synergies in terms of development opportunities in that region. In Raven Ridge, the southern of our two properties on the Alberta side, we require a bit more technological advancement to take full advantage of the opportunity. Our reservoir there looks much like Cenovus’ potential Borealis project.”

Light Oil

Despite light oil representing only 3% of Canada’s oil reserves, CAPP predicts that it will represent 18% of production in 2011 (538,000 BOE per day). With netbacks for most light oil projects far higher than those seen in the oil sands, light oil production will represent a far higher share of the total profit generated by Canadian oil in 2011.

The WCSB’s potential to produce exciting new light oil plays is often written off. This is a mature basin in which most of the initially recoverable reserves have been extracted, after all. However, while the basin’s geology is well understood, the industry’s constantly evolving capability to employ novel techniques to extract additional barrels is forcing analysts to look anew at many of the “old” plays.

If there is one play that demonstrates Canadian’s ability to innovate, it is the Bakken. This play has come to symbolize a renaissance in Canada’s light oil industry and helped place the province of Saskatchewan on the radar of the oil and gas investor.

The Bakken

The Bakken is a formation that has been known since the 1950s. What turned it into the hottest play in both Canada and the U.S. was the improvement in horizontal well drilling and capacity to pack ever more fracs into these wells.

On the Canadian side of the border, the Bakken rush started in

Saskatchewan. Today, E&Ps are extending the play west into Alberta and east into Manitoba.

A man synonymous with the Bakken is Trent Yanko. Yanko helped pioneer the application of horizontal multistage fracs in the Bakken and built his last company, Mission Oil & Gas, to 7,000 BOE per day, primarily through the drillbit, in the play. Today he heads Legacy Oil & Gas, which works in the Bakken and other emerging plays.

“As a worldwide commodity, light oil is becoming scarce, so light oil will always be a premium product...,” says Yanko. “The Canadian light oil story has been under appreciated. There’s a large amount of potential in Canada for light oil as the Bakken has demonstrated.”

It should be noted that while most Canadian Bakken production is light, on the Montana side of the boarder heavier API production is more common and there are an increasing number of cold Canadian Bakken producing wells.

Reliable Energy has secured 115 net sections in Saskatchewan and Manitoba. Understanding that “geology does not respect borders” (in the words of CEO Murray Swanson), Reliable has pursued the play back across the international line into Montana.

The margins from the Bakken’s light and sweet oil are high. In April, Reliable announced its year-end results with 214% production growth through the drillbit to 333 BOE per day. At an average sale price of \$77 per barrel, the company achieved a netback of \$51.57 per barrel.

“We achieved a lot in 2010, it was without doubt our best year since we started operating in 2005,” says Swanson. “This is despite the fact that the operating environment was tough, it was hard for everyone to get drills and fracs, and being in an emerging area, there are not as many drillers and fracers driving past us.”

John Newman, VP finance and CFO at Reliable, adds, “The Manitoba government is very business friendly...The Manitoba royalty regime is great; it’s a low cost environment in general. While in its early days, we think that the Bakken in Manitoba is highly prospective and when you combine this with the royalty regime, as well as the attitude of the government and the people on the ground, it makes for a great place to do business. I think that the industry is starting to wake up to this.”

“We are a first mover and one of the challenges that this brings with it is limited data,” says Swanson. “There is not a lot of Bakken information in our area. Our first well indicated a significant reservoir, and we will continue to drill exploration wells and delineate.”

The Cardium and Slave Point

The race is on to find the next Bakken. In such a diverse, mature

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and large basin, there are a lot of opportunities to apply what has been learned in the Bakken and continue the process of looking at established plays in new ways.

Following closely behind the Bakken, the Cardium is attracting a lot of capital and analyst coverage in 2011.

"We currently have assets in North Valhalla, southwest Saskatchewan, and the Cardium," says Grant Fagerheim, CEO of Whitecap Resources. "The Cardium play is a very big growth engine for us moving forward, with over 110 identified locations."

Fagerheim is betting on the Cardium and recently acquired more land in the play through the acquisition of Spry Energy.

The company chose to focus on oil just at the right time. "We started this company privately in 2009 and specifically designed it to be heavily based in oil. We are currently over 75% oil, and 90% of our gas is associated gas with the oil we produce.

"I've always been a big believer that you don't have to be the absolute front end to be a junior oil and gas company, but you do have to be entrepreneurial, have access to technology, and you have to understand where the markets are as well.

"Technologies continue to advance very rapidly, and we're trying to get as close to the front end of it as possible," adds Fagerheim. "I think the Cardium is two to three years behind the Bakken play and in the very early stages of development. New technologies and practices are being used, but I don't yet think we have the recipe for it. And technologically, it's getting more and more understood and the results from it are getting better.

"Each well that we've drilled has progressively gotten better results, which is very encouraging. I wouldn't want to be a pure Cardium play, but I think having a fair share of your portfolio, maybe 40% to 65% in the Cardium, is great."

Wade Becker and his team were one of the first into the Bakken. They built Peerless Energy Inc. from nothing to 6,000 BOE per day in the space of three years, before selling out to Petrobank at the beginning of 2008.

Becker is hoping to repeat the trick with PineCrest Energy. When the company sold to Petrobank, he says, "We were aware of the play that has formed the basis of PineCrest; however at that time, the royalty regime made the play uncompetitive relative to others areas competing for capital, so we waited.

"When the new Alberta royalty framework was instituted, we started to examine the Slave Point play in more detail to see how it compared to other plays in terms of risk and repeatability, and it compared very well. From a risk, reserves and production standpoint, we think that it is one of the best plays in the basin.

"We have spent US\$70 million on land acquisition, and we are happy with what we have, relative to what we had with the Bakken at Peerless. From a standing start in May 2010 to now, we have had tremendous success in accumulating assets in the Slave Point play and raising capital on our vision and business plan."

In the high-cost environment of the WCSB, E&Ps are aware that to search for high netbacks, strong production and reserve figures alone do not suffice.

"A lot of the costs in traditional mature oil production in the WCSB are associated with handling large volumes of water," explains Becker. "Typically in southeast Saskatchewan, when we bring on a new well we may produce a well that is 100 bbl/day of oil where it might be 1,000 bbl/day of fluid, which has to be pumped, separated and disposed of, which is costly."

"The Slave Point play does not have a lot of water and that gives us a big cost advantage. Everything is pipeline connected, and we own the battery and other facilities, which means that day-to-day costs can be easily managed. It can become costly if you are not pipeline connected, if you have to transport fluids or if you have to service your wells. Currently we are laying pipeline for the wells that we are bringing in the battery."

Becker ensured PineCrest was well funded from the onset. "In the second half of last year we were able to raise approximately \$174 million," he says. "The ability to do so came down to two fac-

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* Complies with COGE Handbook standards and National Instrument 51-101 entitled Standards of Disclosure for Oil and Gas Activities as adopted by the Canadian Securities Regulators. This resource evaluation, dated June 2010, can be viewed in its entirety on Anglo's website, www.anglocanadianoil.com.

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tors: the background/track record of the management team and the characteristics of the Slave Point play.

"We are now beginning to demonstrate how the drilling program has worked in practice. To go to the next phase, at some point we will likely need more capital, and our results should demonstrate that we have done what we said we would do in phase one... The well performance is relatively predictable on this play, so it is easier to get sustainable on a cash-flow basis. We don't anticipate having a 70% decline in the first year. It is maybe 40% to 50%. At US\$80 oil at 2,000 bbl/day, you are looking at \$45- to \$50 million cash flow, so you can get to a level of self-sustainability rather quickly."

New look at Nordegg

Another play just starting to gain traction is the Nordegg, east of Edmonton in Alberta. Like so many of Canada's "new" plays, the Nordegg has been known for many years.

"The Nordegg play is something we've had in our back pocket for the last 30 years," recalls Jim Ehret, president of Anglo Canadian Oil Corp., an early mover in the play. "It's a source rock and with the new fracturing and multistage technologies, there is the potential to unlock a lot of oil."

The Nordegg is often type cast as a shale formation, though it's a little more complex in reality. "Geochemically, there's a high percentage of total organic compound compared to the Bakken, so there's a lot of potential reserves built up in that shale. But it's a marine shale, and in today's environment of non-conventional shale gas or oil, it's not a real shale. It's actually closer to limestone," explains Anglo Canadian director Frank van der Vliet.

"There are three wells there that in total produced over 600,000 barrels, so why aren't there more?" asks Ehret. "We think there's a decent fracture network there and so far we've put in two wells, a horizontal and a vertical that's doing about 10 BOE per day. It doesn't sound like a lot, but we don't think these are in the sweet spot."

"We're trying to find that sweet spot geographically as well as gaining more efficiency on our fracs. Hydraulic fracturing is a big business here, so people are working hard at developing new technologies and applying them. So if we can get 25 bbl/day out of a vertical well but apply that to a horizontal well with multistage fracturing, we'll be at 100-150 bbl/day, which makes it economic. We think it can be comparable to the Bakken play in Saskatchewan—similar costs and similar rates of production."

Like many a junior, Anglo Canadian has been held back this winter season by a lack of equipment and crews. "We had to wait a couple of months on the first horizontal drill and a month on the vertical, which is why we weren't too keen on drilling this winter," explains Ehret. "The crew availability just isn't there. They are so

busy. I think it will slow down in the summer and over the next year there will be more people building and more crews coming on, which should help us."

In today's operating environment, having year-round access offers an opportunity to significantly lower developments costs. "If it's winter-only access, the drilling season is short, over mid- to late March. But we've scouted eight or nine sites and only three are winter," notes Ehret.

The Viking post-royalty review

The Alberta royalties review of 2007 put many off investing in the province. However, some took a contrarian approach to the issue. "We were able to look at the royalty and trust issues as opportunities instead of problems, because it allowed us to put our acquisition-focused business plan into motion. People were taking a very short-term view on things and walking away, but we recognized that it would change over time," says Westfire Energy CEO Lowell Jackson.

Westfire purchased heavily in the Viking light oil play in eastern Alberta and southern Saskatchewan. By the end of 2010, it had secured 242 net sections. "If you want to be successful in business, you have to be looking long-term. So we aligned our acquisition-focused strategy to put as much Viking into our company as possible. With our first opportunity, we tore the technicals apart and analyzed previous resource plays of other companies in the area and began to realize we could apply horizontal multistage frac technology."

Westfire has been working on the Viking for three years, but Jackson is hesitant to claim they fully understand it yet. "What we've discovered is the more we learn about the Viking the less we know. But I do think we have a recipe to allow us to move in and start manufacturing now."

"Over the course of three years, the number of producing wells in the area has jumped from zero to five or six hundred. So some areas are de-risked and showing high quality reservoirs, others are showing nothing. It's very well delineated geologically but the geographic footprint is huge."

With a play as huge as the Viking, it's inevitable that a major will step in to lead development at some point. "It's really fragmented in terms of ownership, so a period of consolidation has to occur," notes Jackson, "It's a play that someone who is larger and has a better cost of capital can go after."

Despite its oft-reported demise, those in the sector have a great deal of confidence in the future of Canadian light oil. As Trent Yanko puts it, "Globally, there aren't a lot of light oil plays, but there are other light oil plays in Canada that will work if people take a fresh look at them and think about exploiting them in a new way." ■

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Q&A: Saskatchewan's Stable Approach

In an interview, Bill Boyd, minister of energy and resources for Saskatchewan, discusses the province's commitment to a stable fiscal and royalty regime.

The Saskatchewan Party was elected in 2007. What did it set out to achieve in the energy sector and how have you progressed so far?

We know that Saskatchewan has a very large resource in the oil industry. It has been developed, but very slowly. I think private enterprises were deterred from the province by the attitudes of previous governments and their lack of investment in appropriate infrastructure.

We knew we had to have fiscal and royalty regimes in place across the board that encourage development in our province. The oil and gas industry has told us repeatedly that it values certainty and stability in the regimes affecting it. In recent years, other provinces started making changes to their royalty structures, which discouraged development, and people in the industry started looking to invest elsewhere. They heard about our stable fiscal and royalty regimes and our promise to continue reducing taxes, and they came. We want to be as competitive a jurisdiction as we possibly can to encourage development. The oil and gas industry is growing rapidly as a result.

How important is the industry to the province and do the people of Saskatchewan recognize its importance?

The people of the province do understand its importance and they really encourage it. They have seen what it does in terms of creating opportunity, business activity and jobs, so they're very supportive. The industry is extremely important, generating 16.3% of our GDP, and it continues to grow rapidly. The sector generates an enormous amount of business activity both in and outside of the industry.

"Stability from an energy-producing jurisdiction like Saskatchewan is obviously something that the industry values."

Also important is the entrepreneur class that is arising in Saskatchewan as a result of the investment. All of these things have created a sharp turnaround in Saskatchewan compared to what has been the norm in the province in the past four or five decades.

In 2010 the federal authorities turned down BHP's hostile takeover of Potash Corp. following heavy lobbying from your provincial government. What signal are you sending to foreign investors about large scale investment in the province?

Some would say it sent out a negative signal, but in fact, we've



"We are a province that will continue to offer stability in royalty regimes, fiscal regimes and a low tax structure," says Bill Boyd, minister of energy and resources, Saskatchewan.

seen anything but a negative response from industry. There were several concerns surrounding that deal, including the belief that it would result in job losses and the negative effect it would have had on royalties to the province. So we could accept the deal but lose revenue, cut services to the people of Saskatchewan and run a deficit or raise taxes.

We decided against it and, despite that, have seen two significant investments in the potash arena and continued to witness record investment in the oil and gas industry. I think people around the world understood what we did and why we did it, so they aren't discouraged by it.

Can the province's labor market accommodate the industry's growth?

I think the companies are doing a good job at attracting a larger workforce. A lot of young people left Saskatchewan in the past and now they are more than happy to return home and take advantage of the opportunities that exist here.

There's also a strong work ethic in the province and companies would prefer to hire locally because of it.

And can the province's civil service keep up with the volume of drilling applications?

We are struggling a little bit to keep up with the drilling applications right now, but we're willing to hire additional people if necessary to keep up. Within the government we're doing okay, but our goal is to actually shrink the size of the government by 15% while continuing to maintain productivity.

Globally, Canadian oil is increasingly referred to as "dirty." What is the attitude toward Saskatchewan when you promote the province on the international stage?

When we travel internationally we always take the criticisms of "dirty Canadian oil" head on by stating that we have been, and continue to be, a reliable supplier of safe, secure, and conflict-free oil. When you look at what's happening in the Middle East with oil, it's hard to be confident in its stability of supply. Simple things like rule of law are pretty important to people and knowing that if they invest here, their property isn't going to be taken from them.

Stability from an energy-producing jurisdiction like Saskatchewan is obviously something that the industry values. There are still concerns about the environmental footprint around oil sands, but when the oil sands do develop in Saskatchewan, they will be a different resource than those in other provinces and so they will be developed differently.

What is your message to investors looking to put their money in Saskatchewan?

We are a province that will continue to offer stability in royalty regimes, fiscal regimes and a low tax structure. When making an investment in Saskatchewan, the long-term picture is fairly predictable with no sudden changes. As a result, we will continue to be a great place to do business with healthy competition. ■

Enhanced Oil Recovery

New techniques are unlocking ever more hydrocarbons.

John Lineham drilled the first commercial oil well in western Canada in what is now Waterton Lakes National Park in 1902. Exploration and production rapidly took off and by 1914 Alberta's first large field was in full spate at Turner Field. Given the long history and declines seen over the years, it is fair to describe the Western Canadian Sedimentary Basin as mature. However, it is far from exhausted, and new techniques and technology are helping E&Ps unlock ever more hydrocarbons from the basin.

Kim Davies, CEO of newly formed Terrex Energy, observes: "If you look at Canada, it's a mature basin. In the last 30 years people have written it off several times, but technology keeps reinventing it. We see EOR as being a continuation of that, bringing that technology into the mature basin in order to obtain the additional oil that's already there."

Harris makes the case for EOR: "Not only is it logical because of oil prices and evolving technology, but also because of the state of the world's oil reserves. In a typical pool you develop it and you get 15% of that oil. Even after you do a waterflood you take another 10% to 15% out. What about that other 75%? We are using processes to go and get a portion of that 75% that's left. You think about all the mature basins left in Canada and there is a huge volume of oil still in place."

The company acquired its Strathmore property for just \$650,000 in 2010. "There were 20 million barrels of original oil in place," says Harris. "It's produced 5 million to date. All the drilling was initiated in the late 1980s, and they started the waterflood fairly quickly. It peaked at around 1,400 BOE per day before it went into decline. Around 1999 they did some additional activity and in particular drilled a horizontal well. It started producing again around 500 BOE per day for a short time and then declined again."

"Every reservoir is unique and you want to determine the process that makes the most sense," says Terrex CFO Norm Knecht. "We're doing a chemical flood at Strathmore. Essentially, chemicals "scrub" the reservoir. If you put chemicals down the injector well, they scrub the rock and loosen the oil. When you follow up with water, it moves all that oil into the surrounding wells."

Operation costs for EOR schemes can be high, but E&Ps avoid exposure to exploration risk and enjoy royalty incentives in the western provinces. Harris explains: "The operating costs are almost twice as much as usual because of the additional complexities of the chemicals and equipment. But these projects take about two or three years to reach their peak. They're long-life reserves, with only

about a 10% decline compared to a 70% decline with a Cardium well."

Terrex is looking to extract an additional 15% of Strathmore's 20 million barrels in place. Not bad for a initial \$650,000 investment.

Canadians have been surprisingly slow to adopt EOR, especially so in the case of juniors. Harris believes that the oil sands is like a brain drain, taking up the attention of Calgary's brightest and distracting them from working on EOR solutions. "The technical resources have gone so heavily into the oil sands that there's not a lot of people who can do this," he says.

The fact that EOR projects have longer payout periods and can struggle to attract investors also goes some way toward explaining the slow uptake. "For a project like this, it'll take a year before you see any results, which is very difficult for a little company to go out and sell," says Harris.

CO₂ flooding is another form of EOR that has significant potential to revitalize the WCSB. Saskatchewan took an early lead in the field at Weyburn, one of the world's largest CO₂ floods. Weyburn Field, which first produced oil in 1954, started receiving CO₂ from a North Dakota coal gasification plant in 2000.

Weyburn is a 1.4-billion-barrel reservoir from which approximately 370 million barrels had been extracted using primary and secondary recovery methods. In 2004, Cenovus started the CO₂ flood with the intention of recovering a further 155 million barrels and locking 30 million tons of CO₂ in place. By 2010 production had reached 28,000 BOE per day.

Adjacent to Weyburn, and sourcing CO₂ from the same source, is Apache's Midale CO₂ flood. Midale produced 154 million barrels of its estimated 515 million barrels using primary and secondary recovery methods. Apache is injecting over 10 million tons of CO₂ to recover a projected 67 million barrels.

Weyburn and Midale are subject to the longest-running independent carbon capture and storage (CCS) program in the world. The Petroleum Technology Research Center's \$85-million, 11-year research project at Weyburn-Midale has been taking air quality samples across the area and monitoring pressure levels to assess the effectiveness of the CO₂ flood and to establish if any of the gas has leaked to the surface. Despite recent claims that CO₂ leaked to the surface and killed animals at a local pond, the PTRC has found no evidence of seepage in 11 years of observation.

Understandably, the western provinces are keen to encourage CO₂ floods. Not only does the process increase production rates, and thus royalty revenues, it also helps the provinces to lower carbon emissions and allows them to claim a leadership position in North American environmental politics. Weyburn-Midale alone captures more CO₂ than is emitted by Saskatchewan's entire housing stock.

Both Saskatchewan and Alberta have committed large amounts to help foster CCS projects, which will almost certainly be directed into CO₂ floods given the economics. Alberta's carbon tax is projected to raise \$2 billion earmarked for CCS. To accompany the funding, Alberta has set out a clear pathway to establishing a CCS legal framework. In this regard it is probably the most advanced jurisdiction in the world. An expert panel has been appointed to advise the government on liabilities and associated CCS issues as part of the Regulatory Framework Assessment. The panel is due to report in 2012 and binding regulation should be enacted within the year.

CO₂ floods are a proven form of EOR. The key limiting factor is the availability of pure CO₂. Coal and gas-fired power plants do not emit pure CO₂ and stripping out the "pollutants" from the power



The team of newly formed Terrex Energy includes (back, left to right): Jim Tyndal, VP of engineering; Kurt Miles, VP of land; and Keenon Jang, VP of geology. Front, left to right: Norm Knecht, CFO and VP of finance, and Kim Davies, president and CEO.

plant exhausts is extremely expensive. The North West Upgrading integrated heavy oil upgrader and refinery is configured to produce pure CO₂ and will be plumbed into a brand new CO₂ distribution system.

North West Upgrading chairman Ian MacGregor explains the challenges of capturing CO₂ and how the company is planning to capitalize on its capability to produce a pure form of the gas: "CO₂ is a revenue-producing product for us, which is absolutely unique. The costs of extracting nitrogen from a carbon stream make all schemes associated with electricity power plants economically impractical. The first step in any successful carbon capture process is getting pure CO₂ and then dealing with it in an economic way.

"Alberta is the best place in the world to do this because we've got old oil reservoirs that are depleted. When you put CO₂ into those reservoirs more oil comes out. There's nowhere else that has the plentiful opportunities for extracting that kind of oil like we have here.

"There are reservoirs in southern Alberta that have the potential to accommodate 2 billion tons of CO₂ and they'll produce about 1.2 billion barrels of light oil once CO₂ is introduced," says MacGregor. "We were here first, we've got great infrastructure and our pipeline goes through 60% of the CO₂ emissions in the province and almost 100 oilfields that have EOR potential."

The availability of pure CO₂ close to well heads should greatly stimulate the development of more CO₂ floods in Alberta, though the North West Upgrading project will only produce a fraction of the CO₂ required to fully take advantage of the Western Basin's EOR potential.

Natural gas liquid floods

A third homegrown method of tertiary recovery is natural gas liquid floods. Gasfrac Energy and its proprietary NGL fracturing technology are the darling of the Canadian stock market at present.

"The difference between our competitors and us is what we pump," explains Gasfrac president and CEO Reid MacDonald. "We pump liquid propane, which has a number of benefits. It has a very low surface tension and is a de-viscosifier, which makes it a good enhancer in low-producing wells. It takes 2,000 psi to move water,



Terrex Energy Inc.'s enhanced recovery operations at Strathmore.

but only 200 to move liquid propane."

Fracing with propane allows a larger area to be taped per well, notes MacDonald. "Propane...is non-damaging...(therefore)...we are able to get a larger draining radius. Also, when a well is fraced with water, you need to burn the load fluid to clean it up and eliminate that water. In the process you're burning off a lot of virgin gas. But propane burns, so we're not wasting any of the gas and we're able to reduce flare and keep our eco-footprint down.

"With a lot of the old wells that were abandoned and no longer producing, we were able to pump propane back into the reservoir to use as a solvent wash and lower the viscosity... It's not uncommon for the well (to) end up producing more oil a day then it had on any day in the 23 years prior," he adds.

In many ways, fracing has become a commodity industry. E&Ps pay X for Y number of treatments using Z volume of fluid. E&P operations managers are conditioned to reducing X rather than considering cost relative to output, says MacDonald. For Gasfrac, "The sell is a little bit different...in that we focus on providing higher production, not just offering the cheapest service... We're a value proposition not a

cost cutting one."

The future is bright for Gasfrac, according to MacDonald. "The number of wells that are completed with fracing these days has us in a good place, especially with the push from E&P companies to produce more from a well with less footprint and invasion, which is exactly what our mandate is.

"We're also able to work in a number of different formations and we're effective on both conventional and unconventional. We work in horizontal or vertical settings and are very effective in tight shale, water sensitivity and low-pressure situations, which are all places nobody else can go, but where all the reservoirs seem to be going to. So we're able to utilize our technology to meet some of the criteria that have just started to surface."

Like many in the fracing industry, the major constraint on growth is not demand or capital, but skilled labor. "Growth really has to be managed because of the inherent dangers of working with something that's under pressure and burns. So we can get the money to build a hundred of these wells, but we have to be able to man them safely. Money isn't the problem, it's being able to grow with people who can follow safety protocol and procedure." ■

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Natural Gas

Low prices and market challenges bring new approaches.

Canada produced 5,628 billion cubic feet (Bcf) in 2009 and it exported 2,947 Bcf (net) that year. Canada is therefore the fifth-largest producer of natural gas in the world, the third-largest exporter globally and by far the largest source of foreign gas for the U.S.

Until recently, most juniors and intermediates were gas focused, with some 70% of Canadian investment in hydrocarbon development going into gas projects in 2006. As in the U.S., the industry became too good at the game, shale-gas production soared, and prices crashed. There is an open border between the U.S. and Canada and prices are inevitably dictated by demand from the populous coasts and the southern states.

To make matters worse for Canadian producers, they are at the "end of the line," far from market. They typically receive a discount to Nymex for their product and must be among the lowest-cost producers on the continent if they are to survive, let alone prosper.

Price discrepancy

Typically, it is understood that there is a strong correlation between oil and gas prices. One can substitute another in certain applications, and outside of North America, gas contracts tend to use oil as a benchmark from which gas prices are derived. An increase in the price of oil will probably lead to an increase in the supply of gas.

In North America, spot prices dominate, and the price of gas is not directly determined by oil. Rather, demand for and supply of gas dictate the price in an open market. In an environment where gas and oil projects compete directly for capital, equipment and people, many observers argue that the price of gas must increase dramatically before people start drilling substantial numbers of new wells.

According to Peter Tzertzakian, chief economist at oil and gas investment fund manager Arc Financial and one of Canada's leading energy economists, "Oil and gas companies are called that because they look for both. But why would a company that's altered its business plan and mindset to start looking for oil ever go back to looking for gas? There is a massive profitability gap.

"So even if the price of gas does climb, I don't think too many companies will be going back to gas. Even technology that was

being used on the shale-gas side is now being applied to oil with increasing success. It's going to be a big change. The question is, when will it happen, and I don't think it's going to be this year, but possibly after next winter."

According to Ryan Shay, co-head of investment banking at Cormark Securities, "Most people are focused on the supply/demand balance for natural gas, so if gas jumps to \$5 there are a number of gas projects that will get drilled. But, if you talk to the service companies, they are fully utilized right now with oil. Even if gas does go up, nobody is going to shift dollars out of oil projects into gas at \$5 or \$6. So gas has to really rocket up to get somebody off of oil. Everybody thinks we have all this cheap available gas, but at some point we're going to be short by a molecule and we'll switch to being under-supplied. And as soon as that happens, they'll realize there's no equipment available to do anything outside of high-margin oil drilling."

Robert Hodgkinson, CEO of Vancouver-based Dejour Energy Inc. (which owns oil and gas assets in Alberta and the U.S.), notes that the market has a habit of righting itself. "The beautiful thing about technology is that it's naturally deflationary. The cheap price of huge quantities of gas is going to help the reformation of the industry so we get to have serious growth again...Everyone's really hot on oil right now. It's interesting that there's a huge oil glut in the States, and that's going to persist for a period of time. Having said that, oil is the international energy commodity and the price will be reflective of that.

"The U.S. is very political and you can see this move to gas. As it takes hold, there'll be exponential growth. The pipeline expansion means that the availability of gas to market is now beginning to happen on a significant basis. It doesn't take much to maintain these leases, and so as long as you do that, you've got value-add at a very low cost. You just have to pick your time."

In the current world of \$4 gas, it's hard to justify new gas wells unless they are drilled to ensure continued land tenure. However, there exist some fantastically economic plays in the WCSB. For Painted Pony, an early mover in the northeast British Columbia Montney play, the economics stack up at virtually any gas price.

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As Painted Pony CEO Patrick Ward notes, "It's still working for us. We're either lucky, blessed, or really smart for being in the right place; a place that has a great reservoir, access to infrastructure, and a great royalty structure. Where we are in the Montney is the best of the best, we can make it work at \$1.5 per Mcf. The play is equivalent to the tar sands in terms of gas in Canada."

The economics

With the price of gas in the doldrums, and forward prices indicating it will stay that way for some time to come, operators are focusing anew on costs. "Cost structure is critical and surface infrastructure is key to that," insists Delphi Energy CEO David Reid. "We own pipelines and processing plants, so that gives us the lowest possible price structure. Surface infrastructure is to a large extent a fixed cost, as we grow production our costs come down on a per-unit basis."

In 2008, Delphi's cost per barrel was \$10.37. In 2011, it is looking at producing at a cost of \$7.10 per barrel and can add production in key areas at an operating cost of \$6 per barrel.

Many Canadian E&Ps had been shielded by prudent hedging through 2010 and early 2011. As today's forward prices reflect a longer-term pessimism about gas prices, many gas producers are choosing to take the downside risk and bet on increased prices going forward by not hedging out as much of their production.

Says Delphi's Reid, "In 2009 we earned about \$22.5 million from hedging; in 2011 we are looking at the \$5-million mark."

Delphi chose to lock in 52% of its 2011 gas production at \$4.93 per Mcf, which, judging by this winter's spot prices, appears to have been a good move.



"Cost structure is critical and surface infrastructure is key to that," insists Delphi Energy CEO David Reid.

According to Dejour's Hodgkinson, "We have had to refinance in the public market in order to strengthen our financial position, and we successfully achieved our objectives. Currently, the joint-venture market is beginning to heat up again and present options. At the same time, the availability of project capital is becoming more accessible for companies such as ours, giving us another potential alternative to equity financing."

Diversification

Diversification is key for Canadian gas producers. Perpetual Energy, the new name of the high-yielding Paramount Energy Trust, is repositioning itself. "Our production today is 95% natural gas," says CEO Susan Riddell Rose. "In two years it will be 75%. What will move us into a more balanced direction is the heavy oil that we have put into our inventory. There are

several exploration targets that we have as well. We are in a highly concentrated asset basin in shallow gas, and we have been repositioning our asset base to add assets in the western part of Alberta."

Investors are still wary of what they perceive to be "pure-play" gas companies; however, there is appetite for "gas plus" companies that have the ability to add something to their offering. "People are intrigued by the vast array of opportunities that we have in our asset base and our ability to approach things in more of an entrepreneurial way," says Riddell Rose.

"Over the last 18 months, we have developed a gas storage project, which is a midstream operation that we run on a commercial basis. We completed the project a year earlier than many expected us to do. People still treat us as a pure-play gas producer, but they are sitting back and watching."

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Robert Hodgkinson, CEO of Vancouver-based Dejour Energy Inc., notes that the market has a habit of righting itself.

Thunderbird Energy Corp. is a Vancouver-based gas exploration company with assets in the U.S. In addition to its gas assets, it controls a large CO₂ deposit that has the potential to add value to the company. The U.S. Department of Energy is looking to utilize the gas deposit as part of a trial CO₂ CCS project.

“The reason that this project came to us is because we are in an area in Utah with existing coal mines and coal-fired plants,” says Thunderbird CEO Cameron White. “On or near our property there are at least three deep wells that flowed from 3 to 4 million up to 15 million cubic feet per day of CO₂, so we know there’s a lot of CO₂ there.”

“The goal is to be able to prove they can sequester up to a million tons of CO₂ a year underground, but they need to get the CO₂ first. It’s a one-stop shop for them—there’s a source for CO₂ where they can bring to the surface, compress, and sequester it back underground. For us, it will bring a lot of money in for infrastructure and it could potentially set us up in the CO₂ sequestering business. It could also provide a large CO₂ reserve for us that we could extract and sell.”

Most of today’s gas companies acquired their assets before the gas-price collapse. Some gas bulls were fortunate enough not to be tied to assets when prices started falling and have started building land positions in anticipation of an upswing.

“We started Edge in mid-2009 when gas prices were awful and the future was bleak, so we’ve been contrarian from the very beginning,” relates Edge Resources CEO Brad Nichol. “We had a fairly tight shareholder group comprised of people who were convinced that gas is going to show some kind of a rebound, and we wanted to be prepared well in advance. Maybe we’re a bit early, but we’re accumulating a land base and trying to be as efficient as we can in building a business for \$3 or \$4 gas with the hope that gas will ultimately go to \$6. If we’re profitable at \$4, we’ll be highly profitable at \$6.”

“We’re focused on gas but not so focused that we won’t consider oil. In fact, we’re just about to complete an oil acquisition that’s opportunistic, shallow, and mature and that generates a lot of income with little or no effort.”



Dejour Energy’s rig at work at Woodrush in the Peace River Arch, British Columbia.

Low prices bring opportunity

Even in the bearish world of today’s North American gas market, teams with the right track record can attract significant investor support. “I set up a company called Berkley Petroleum, which we grew during the ‘90s on a 6:1 basis to 40,000 BOE per day. Berkley Petroleum was subject to a hostile takeover by Hunt Oil at Christmas 2000 and was eventually sold in March 2001,” recounts Mike Rose, the most successful and celebrated gas man of his generation. “Duvernay was set up in summer 2001 with the same management and technical team and went public in February 2004 and grew to 28,000 BOE per day.”

Rose and his team worked through the stampede, Calgary’s 10 days of debauchery, to sell Duvernay to Shell for \$6 billion.

With such a phenomenal track record, Rose can raise capital whatever the price of gas. Leveraging that, and the large amounts of capital he and his team had pocketed with the disposal of Duvernay, Rose undertook a land grab during the economic crisis. Needless to say, the discounts available were significant.

“We focus on the western side of the sedimentary basin, which contains more gas than oil. We set out to have two or three large core areas, with a large inventory, and

strive to be a low-cost producer, which is essential in a volatile gas price environment.”

In 2010, Rose took his new company, Tourmaline Oil Corp, public.

Tourmaline has assembled a significant land position and should be able to achieve the economies of scale so important if value is to be added to gas assets. “In the deep basin we will drill at four vertical wells per section; at two vertical wells per section we have 3,100 locations in inventory..., which is a tremendous amount of value for us to unlock and turn into production and recognized reserves,” says Rose.

With gas trading at such a discount to oil, many believe that new markets for Canadian gas will be opened up. As Canada Energy Partners’ Ben Jones and John Proust note: “The 20:1 price differential between gas and oil is unsustainable. If you can buy a Btu of heat for a third of the cost of a Btu generated by crude oil, people are going to figure out how to burn natural gas...Now is it going to be the Pickens Plan, or using gas-to-liquids technology? The jury’s still out.”

Liquids allure

In the Montney, South African major Sasol recently structured a large farm-in with Talisman at \$30,000 a net acre. Jones notes: “The Sasol deal was done on the

premise that they would build the first gas-to-liquids plant in western Canada... We think it's exciting that the feasibility study for the first gas-to-liquids plant in the country is being done adjacent to our land."

Across North America, gas operators are looking to drill liquids-rich gas targets. In Canada, the vast bulk of gas produced is not associated with oil but comes from gas-only fields. However, many of these targets have a high level of natural gas liquids (NGLs) in place. In the WCSB, the appetite for liquids-rich targets is even more pronounced. Due to the viscosity of bitumen, a high level of diluent is required to transport it, and natural gas condensates make an ideal diluent. While western Canadian gas suffers a discount to the typical North American market price, diluents produced in western Canada are close to market and thus attract a premium to typical continent-wide prices.

Compton Petroleum, a virtual pure-play Canadian gas company, recognizes the impact on economics that even a relatively small amount of liquids production can have on a gas well. "We are focusing our development drilling on liquids-rich gas targets," states CEO Tim Granger. "A well may produce a million or two of natural gas, but it will also do about 80-90 BOE per day (of liquids)."

With NGLs attracting a premium, "liquids make a huge difference in (the) economics," notes Yoho Resources CEO Brian McLachlan. Yoho was an early entrant into the Peace River Arch and has assembled a land holding that allows it to pick and chose dry or liquids-rich targets according to market conditions.

"Instead of waiting for gas prices to increase, we allocated all our efforts towards finding gas that has high liquids content with it, which will carry your day until gas comes back up," says McLachlan.

The pursuit of liquids is not limited to the juniors. Chris Summers at Devon says, "Currently, anything that's purely natural gas and doesn't have some strategic reason for investing in, isn't being invested in... The good news for us is that there are no imminent expiry issues with the large land base that we have... On the gas side we're still putting about \$150 million dollars in, but only with liquids-associated projects."

Educating the investor that a "gas" stock might actually produce, or be able to produce more liquids (NGLs or crude) can be an uphill struggle. As Brian Dau, CEO of Anderson Energy, notes, "Right now the investor still considers us a natural gas company and the valuation of the stock is tarnished by the gas name. We're taking the gas decline, and replacing it with oil. So the investor will start to see that. In 2011 we will spend 100% of our budget on oil."

Montney: Gas at any price?

Prior to the collapse in North American gas prices, the Canadian plays attracting the most dollars and the biggest names in the oil

and gas business were not light oil targets such as the Bakken, but the mega-sized, gas-rich shales of northeastern British Columbia and Western Alberta. Land auctions in the Montney and Horn River broke records in 2007 and 2008 as E&Ps fought for control of these massive and well-understood shales. In the July B.C. land auction, Montney assets sold for a record-breaking \$610 million.

Ben Jones, CEO of Canada Energy Partners, notes, "Morgan Stanley recently conducted a study which identified the Montney as one of the top five shale-gas plays in North America." What makes the Montney, one of the most isolated oil and gas plays in North America, so attractive even in today's environment?

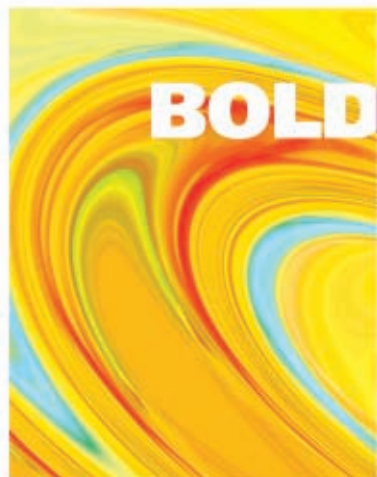
Risk, or lack of it, is key. As Don Gardner, CEO of Montney-focused junior Canadian Spirit Resources Inc. (CSRI), observes, "This is a low-risk play. The geology of the Montney is well understood and all around us majors are de-risking our property through their drilling programs.

"The attraction is that there is over a thousand feet of Triassic shale formation that's gas-saturated top to bottom," notes Jones. "Talisman has declared publicly that the entire thousand foot interval is commercially productive. Their Montney acreage is right next to ours, and they have up to 450 Bcf per section. One of the good things about Canada is that everyone has to submit their geological data to the province. Since that data is publicly available, you have a freedom of information unlike what is available in the U.S. It makes for a very competitive environment up here."

Despite this, some of the majors are pulling back from the Montney. Shell had farmed into some of Canadian Spirit's lands in 2008. Despite investing and demonstrating reserves, Shell chose to hand back the property in 2010. Even with the Shell pullback, Gardner remains confident that the assets will appeal to the larger companies who are interested in building their land positions. As Garner observes, "There has been a lot of activity around our area despite the downturn. We will probably sell out our assets within three years to a larger company looking to develop."

One might assume that, post-gas crash, things are quiet in the Montney. However, in February 2011, even as gas prices remained low despite a cold winter, Chinese national oil company PetroChina agreed to pay \$5.4 billion for a 50% interest in 650,000 acres of Encana's Cutback Bridge business. Cutback Bridge is largely comprised of Montney land and the deal gives PetroChina some 255 million sq. ft/day of existing production plus exposure to significant drilling inventory.

Apache owns some 5 million acres in Canada and in 2010 purchased an additional 1.3 million acres from BP. Canada reserves represent some 28% of the company's global total and the Horn River is a key component of Apache's long-term North American strategy. Apache has a 50% working interest in 210,000 acres of the Horn



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Tim Wall leads Apache Corp.'s Canadian operations.

Tim Wall, VP Canada at Apache, notes that "this year, activity will be limited, as I think it will be across the (gas) sector," –however, limited for Apache still means drilling an additional 10 wells in the Horn River this year plus completing a further 28.

Liquefied natural gas

What gives Apache the edge over its competitors in the shales of western Canada is a corridor to new markets. Apache is the lead partner in the Kitimat LNG project. The Kitimat LNG project comprises a new gas liquefaction facility and sea terminal 400 miles north of Vancouver on the west coast of Canada and an associated 287-mile pipeline linking the terminal to the gas distribution network in western British Columbia. Apache currently own 51% of the project with EOG Resources controlling the remainder. At the time of writing the partners had entered into an agreement to sell 30% of the project to Encana, leaving Apache with a 40% share.

In the words of Apache's Wall, "Kitimat completely changes the way you view our (Canadian gas) assets." Kitimat's initial capacity will be 700 million cubic feet per day (for 5 million tons of LNG a year). Apache's 40% share will give it exposure to 280 million cubic feet per day of export capacity, or 70% of its 2010 Canadian production.

Despite the fact that Kitimat will only be able to handle 4% of Canada's gas production, there is recognition that the facility will change the face of the Canadian gas sector. In the words of Painted Pony's Patrick Ward: "It doesn't make sense to be selling gas to the U.S. for \$4/Mcf when we could be selling to Europe or Asia. Kitimat will be a game-changer for the country and the natural gas market in North America. Gas prices will go up when exporting becomes possible."

Resource plays

The collapse in North American gas prices has caught out many a Canadian junior. However, a focus on large unconventional plays with the potential to "go industrial" on the drilling and fracing may be the best way to drive capital values, if not short-term revenue.

Unconventional Gas Resources is a pioneer junior, the first commercial exploiter of coalbed methane in Canada. UGR's CEO Michael Gatens and his team bring a wealth of experience to the table when it comes to gas.

While fully acknowledging that the current price of gas makes exploration and development of shale-gas targets challenging, Gatens notes that, "We take a longer term view of things and believe that gas prices will pick up in the medium term."

The current trend is for "resource plays," but Gatens notes, "I have been chasing big plays for years, so have most people, it's just now they are called 'resource plays.' It's more of a branding thing rather than a change in mindset. We are all looking for big, repeatable plays and we think we have some in the company."

As a privately held company, UGR can perhaps take a slightly longer-term perspective, though Gatens still has to keep an eye on an eventual monetization of assets. "Despite the collapse in gas prices, there has still been a lot of M&A and JV activity in our area, driven by majors and super-majors," he says. "We are looking for partners for some of our assets, if the price is right. Lager companies have a lower cost of capital and can leverage a brand to develop out the sort of assets we own."

Shale gas and ultra-large conventional targets may be the name of the game for the big boys, but several small and midcap players believe that they can build profitable operations around medium-sized conventional gas targets.

"The driving technology has been the concept of horizontal

drilling with multistage fracturing,” notes John Rossall, CEO of gas junior Prospec Energy. “That has allowed the large players to access shale gas. Shale is a much lower-quality resource than has been developed historically. It’s a big leap down the curve of reservoir quality. So, the restructuring has been that the ‘big guys’ are all pursuing shale gas in Canada.

“That leaves the small guys with a strategic choice of taking the somewhat less abundant resources that are higher quality than shale,” continues Rossall. “At last year-end, we had 12 million BOE of P+P reserves. That’s 100 Bcf of gas. By staying in the niche of taking mid-sized assets and still economic projects, I’m never in competition with the big guys.... We are accessing reservoirs that are similar to what we have done in the past.

“All we’re doing is using the new technology to further improve our economics. We’re operating in places where there are already vertical wells drilled and completed. We can characterize the resource, based on the data we already have, before we go into it...There’s a lot of overlooked potential in conventional areas.”

While most of the focus in western Canada in recent years has been on assembling unconventional “resource plays,” some teams believe that significant value can be built by acquiring unfashionable conventional assets on the edge of the fairway.

Manitok Energy’s CEO Massimo Geremia explains: “We have deliberately followed a contrarian strategy, both in terms of asset class and location.

“Our main focus is oil and liquids-rich targets in the foothills area of western Alberta, complemented by lower-risk heavy oil opportunities. The foothills have great infrastructure because of the development associated with deeper targets, but not enough atten-



An aerial view of a Questerre well during completion operations in Quebec.

tion has been given to the conventional targets.”

Geremia is searching for large, repeatable targets, but keeping costs down has been key from the onset. “We acquired land for as little as \$150 per acre and are carefully located in areas with surplus gas processing capacity. Our gas is liquids-rich, but you have to structure your deals and target your money to keep your costs low today.

“Our team has many years experience in the area, most of which they accumulated with Talisman...but we still need to educate the investor about the foothills opportunity and demonstrate through achievement that we are the company to realize that opportunity.”

At the end of the 2010/2011 winter season, Manitok tested its newly drilled Stolberg well to an IP of 739 BOE per day, including 100 bbl/day of NGLs, suggesting that there is life and liquids in the foothills story still. ■

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Juniors: A Canadian advantage?

Effective exchanges and a welcoming atmosphere await smaller caps.

Canada is estimated to be home to 45% of the world's oil and gas companies and the host to approximately half the world's privately accessible oil. Calgary is one of, if not the best, places in the world to run an oil and gas junior, and the TSX-V is one of, if not the best, exchanges on which to launch an oil and gas micro-cap.

The story of Primary Petroleum, a Canadian junior with large land holdings just south of the boarder in Montana, provides an interesting example of the difference between the Canadian and American capital markets.

"The investment stays very segregated because of the border, with Canadians staying on the Canadian side and Americans on the American side," observes Mike Marrandino, Primary's CEO. "For us, 2010 saw interest from the Canadian side but we were too small of a company on the market (capitalization) side for the American investors."

In 2010, Primary's neighbors started defining the Bakken around Primary's considerable landholdings and the company's stock soared. "Now we are a \$100-million market-cap company and are getting stronger interest from the U.S. market. Canada was our stepping-stone, and now we're moving to the next level of investor... Institutional investors are now calling us and it's been a bit of a role reversal, which is very exciting on our part."

In the U.S., juniors tend to stay private until late in the game and onerous regulations make listing (and maintaining that listing) expensive. For the busy junior management team trying to build an investor following, raise capital, trade land and get on with the business of finding oil, dealing with reams of red tape and associated liabilities can be suffocating. In Canada they have more freedom.

Capital alternatives

In the U.K., the AIM provides a more risk-tolerant and globally aware investor base. However, investors tend to be looking for massive upside to accompany that risk and greater liquidity in the form of a larger market capitalization. European investors are rarely as in touch with the actual business of oil and gas as are their cousins in Calgary and Toronto, and they have been battered hard by the financial crisis.

Concerns about the performance of AIM-listed companies and an unease concerning the regulatory environment may be encouraging British investors to gain exposure to emerging oil and gas stocks through the TSX. According to Colombia-focused Bolivar Energy CEO John Moreland, who still retains a hint of his Scot's accent despite many years in Canada, "Most of the (investor) interest is coming through Toronto, but there's interest both in the U.S. and Europe, particularly through London. I think the AIM market hasn't been successful over the last few years, so the London investor is looking at Latin America through Toronto."

William H. (Bill) Smith, CEO at France- and Australia-focused junior Gallic Energy, says, "Most of the time even European projects get sent to Toronto and New York first. However, there clearly is appetite for oil and gas exploration and development projects (especially those located in Europe) across the pond. We spent one week in Paris and London (speaking to investors), and they were very appreciative of us starting in Europe."

Chayan Chakrabarty, of Bengal Energy, notes that CEOs of foreign-focused juniors may have to spend more time educating investors in North America than they might have to in other markets. "I find that it isn't just the diversity of our assets, but even the geographic location of those assets that often poses certain questions for the average North American investor."

"Yet when I go to London, there is a quick understanding of why

we are in India and Australia. The questions seem to be much more targeted and informed, much like what we'd hear when taking a heavy oil story to Toronto. But we are hoping to see that change as more companies come into the areas (in which we operate)."

Bigger juniors

Has the ball game changed in the Canadian junior marketplace? In other sections of this report we have discussed the increased importance of multistage fracs in horizontal wells and the demise of the income trust model. The barrier to entry has risen for the junior and the classic exit route has been banished by the federal government.

Brickburn Asset Management's Martin Davis, who has long helped fund juniors, notes that the tide started turning against the smaller juniors five years ago. "Our focus has historically been small oil and gas businesses, but that's changed because the really small guys, sub-1,000 BOEs, have a much tougher go of it. The high point for the junior energy market was in 2005. It changed in 2006 when costs went through the roof and the industry was at full capacity. You couldn't get a drilling rig, you couldn't get a well serviced, and all the major companies dominated the space and pushed the little guys out of business.

"As that was unfolding, income trusts emerged (as players in the exploration and development space), then the government changed the taxation rules for those trusts and the junior market took another hit, because that was a liquidity option everyone was focused on."

Davis' partner Bill Bonner notes, "Today you have to start with a larger production base. The starting point for junior micro-caps is going to be 2,000- to 3,000 BOE per day and they're going to have to acquire it. It's going to become a different business."

Horizontal, multistage fracs are substantially more expensive than traditional vertical, unfraced wells. "The advent of horizontal, multifraced wells has forced a lot of micros like our company to really look at metrics that work and start to step out of North America," states Blackbird Energy CEO Garth Braun. "If you were not one of the companies that bought some of the Bakken when it was \$100 an acre, then you can't participate. Horizontal wells are too expensive for exploration. When you include multiple fracs, the cost per well can be \$4 million or \$5 million—that could be all of a micro's exploration budget. One dry well, you're out of the game!"

Clearly, juniors will not be compelled to develop into midcaps. There is still an exit opportunity for those with the right assets, ar-



Trican Well Services' frac trucks on a job in Canada.

gues Steve Fitzmaurice, CEO and chairman of Hawk Exploration. "If you have good, high-quality assets, then there's always going to be a market for them. You may not get the premium prices that you saw in the heady days of the trusts, but if the assets are of a high-enough quality, then when the time to sell comes, there'll be suitors."

Post-income trust, the exit model has changed for most juniors, and management teams need to be mindful of this from the onset. "You have to be careful how you create your asset combinations today," says Larry Parks, CEO at Ironhorse Oil & Gas. "You have to deal with quality all the way through, so you need to develop a core area, a focus area, a high-enough working interest and then decide how far you want to develop it. If it's fully developed, then there's no more upside and it's going to be hard to find a purchaser. The trusts used not to be in the drilling game, but now they have converted back and have an appetite for value addition through the drillbit. Now you have to get bigger to get better and the game has changed."

There can be little doubt that in this new world of multimillion-dollar wells, there will be substantially fewer micro-cap oil and gas companies. However, veteran junior builders, who can hunt out the right land and know how to get profitable hydrocarbons out of smaller asset bases, still attract a loyal investor following.

Kelly Ogle, CEO of Trafina Energy, has this advice for the budding junior builder trying to raise funds: "Use your Rolodex to phone everyone you know and try to raise money. Then people make the next step to the flow-through funds. Once you've raised about \$5- to \$10 million, you have to make the next step to the in-



Kelly Ogle, CEO of Trafina Energy, has this advice for the budding junior builder trying to raise funds: "Use your Rolodex to phone everyone you know and try to raise money."

stitutions in Toronto, New York, and Boston. You're probably not big enough to get attention. But you have to have something unique to show them, like the Bakken or Cardium or heavy oil."

Ogle was able to call on relationships built from a lifetime in the oil and gas game to recapitalize Trafina when he took the company over. "I went to a person I know who was a founder of one of the top oil and gas investment banks in Calgary and now runs his own fund. He put a million into Trafina and found other guys to put another million in it. I doubled my capitalization in order to buy the land that we acquired. I know that if we deliver and continue to show results for this fund then they'll be the lead order in any financing that I do... If you've got a lead order, someone believes in your story and others will follow."

Financial services

Calgary, the hub of Canada's oil and gas industry, is also a superb place to raise capital, particularly for the junior. Mike Tims is

co-chairman of Peters & Co., the boutique investment house where many of the city's bankers learned their trade.

"The Calgary market for investment banking is one of the most competitive anywhere, because everybody's in it: large global firms, large U.S. firms, the Canadian banks and the independent firms," he says.

Why has Calgary become such a financial center? After all, the town is only the fourth city in Canada, a relatively small economy when compared to Europe or the U.S. Clearly, the relationship between E&P companies and the financial service sector is symbiotic; the more clients, the more banks; the more capital, the easier it be-

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comes to launch a junior. The state's determination to leave hydrocarbon exploration in private hands, the city's pioneer-inspired entrepreneurial spirit and the success of the TSX-V have all played a vital role as well.

Adam Waterous, head of global investment banking and president of Scotia Waterous, says, "The investor base (in Calgary) has been educated through past successes and knows to come to Calgary as a center for excellence. While the regulatory environment here is helpful, I don't think it's the driving force. It is certainly less bureaucratic and onerous, but that is only one of many reasons as to why there is so much success in Calgary."

Bruce McDonald, managing director and global head of energy at Canaccord Genuity, believes that Calgary's success is based on "knowledge, the sophistication of investors and the research community and the quality of the consultants."

High standards of governance make Canada a safe harbor for globally mobile capital. Says McDonald, "We have a very strong sense of corporate governance and structure. A lot of our investors look to the quality of the board as well as the management when making investment decisions. We've done a good job of putting together boards that create confidence and global credibility with investors. Also, there's less confusion about the exchange. Foreign investors know to look to the TSX and the TSX-V for energy and mining companies."

"We do business on several different exchanges [since] energy financing is becoming very global in nature. If we were to put up a transaction that's large and international, most of the investors would be from outside of Canada, so the global markets are very important to our business. The global markets are very comfortable with the TSX," he concludes.

While Canadians have a reputation for being financially conservative, Phil Taylor, head of Union Bank's Canadian operations, notes that the reputation is only partially founded: "People tend to think that Canadians are conservative and risk-averse. ...but in the oil patch, Canadian companies are very aggressive and take risks on things such as looking for and adopting new technologies. They tend to do that with risk capital instead of bank debt. They'll fund the initial stages with equity, prove that it works, and then put layers of debt in to support the ongoing expansion of those activities."

"Most companies are public and try to manage debt-to-cash-flow ratios of around 1- to 1.5 times," says Taylor. "The expectation and the reality have proven that if you start to approach higher levels [of debt], the market expects you to have to issue equity in order to solve your debt problem, and your equity gets depressed in price. This is a different model than in the U.S., where 2 to 2.5 ratios of leverage levels tend to be common. I think that, in Canada, borrowers tend to hedge less than in the U.S. In Canada, we typically

see companies hedging 40% to 50% of their production, while in the U.S., companies are hedging 80% to 90% of their production because they need to support a higher debt level and need more surety to their cash flow."

There can be little doubt that Canada has come out of the global economic crisis stronger. Indeed, the only sector to benefit more than the country's energy and minerals sectors is the nation's financial services industry. Derek Neldner, managing director of RBC Capital Markets, says, "When it comes to energy, Canadian banks are now among the world's leaders. The Canadian banking system has won accolades in terms of our regulatory oversight and how the industry fared [throughout the crisis]."

For RBC, "It's worked out exceptionally well that an ambitious international growth strategy put in place before the crisis has been rapidly accelerated," continues Neldner. "We went from being the 35th-largest bank in the world to the 15th. Because of the stability shown in our results, we've been able to attract a phenomenal group of people. It's moved us ahead by a number of years in terms of our build-out in the U.S. and London."

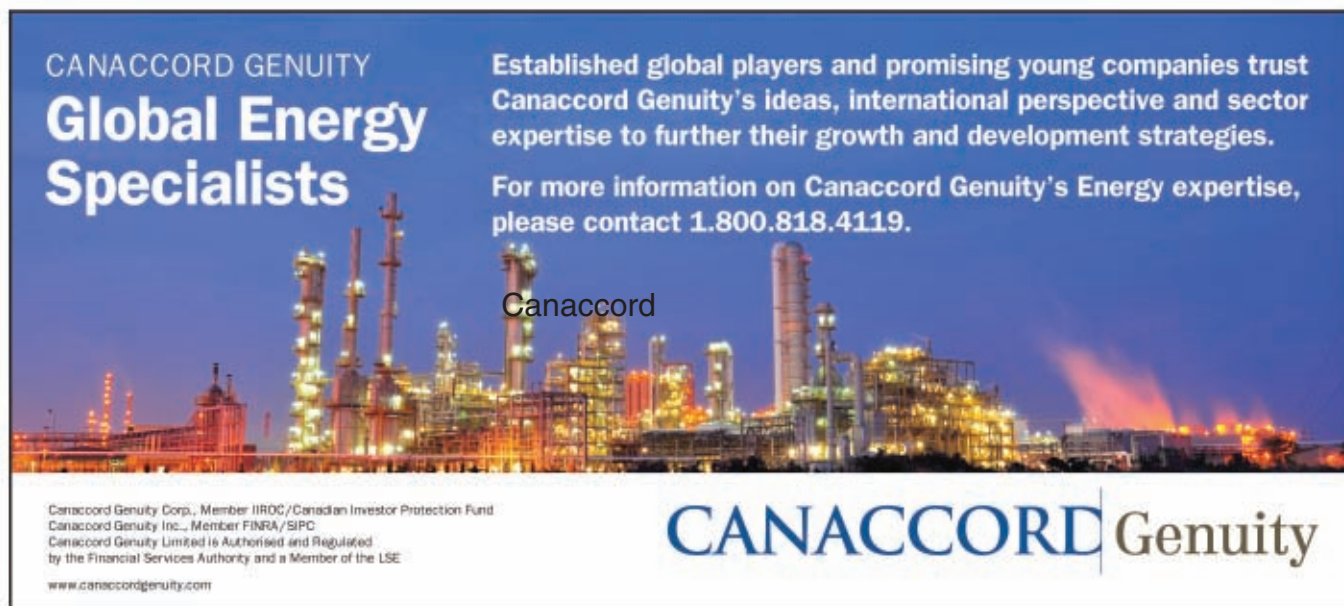
2010 was marked by a flurry of IPOs and further public offerings as companies took advantage of the first benign markets in two years. While capitalization and re-capitalization activity is set to continue through 2011, the year may be better remembered for its M&A and JV activity instead.

"Where we've really seen it pick up in Calgary is in M&A," says Timothy Watson, head and managing director of energy and power, Canada, for Bank of America Merrill Lynch. "Within this [broader M&A trend], the cross-border flow of capital is the most eye-catching feature. Over the last two years, joint ventures have been very popular in the U.S., many of which have been done with foreign capital. We are now just starting to see that in Canada, but I anticipate we'll be seeing a lot more."

"To secure the sort of capital required for the new breed of JVs you really do have to be able to reach capital internationally, into Asia, India, and even the Middle East to find buyers," notes Watson. "Buyers are becoming more and more saturated with these joint-venture transactions and yet they keep happening and we keep doing them. These joint ventures have to be strategic because you are choosing a partner for the next 20 or 30 years, so it fits very well with what we look to do."

Private equity

The Canadian E&P sphere has traditionally been dominated by publicly listed companies. The importance of public capital in Canada stands in marked contrast to the financing environment in the U.S., where private equity reigns supreme in the world of juniors. Given the ever-increasing cost of exploration and develop-



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ment, the need to assemble large land holdings in order to pursue resource plays and the longer time frames required to fully explore them, it remains to be seen whether private equity will become a greater force in the Canadian E&P world.

Private equity has its attractions for both the investor and management teams, argues Pentti Karkkainen, general partner at PE fund Kern Partners. "If you're a public market participant and you're going to buy Encana, for example, you're exposed to all of the drivers of public market volatility which are well beyond your control.

"With private equity, you're moving away from those things that are out of your control and towards higher risk from a resource perspective. It's all about managing risk; both the components you can't do anything about and those that you have the power to do something about.

"The Canadian advantage used to be the free access to information, but if you're good at what you do it can be a disadvantage. If you're public you have to give full disclosure in order to get a higher share price. If you're private you don't have to talk at all. The evolution of public markets with their legal, regulatory, and reporting issues are driving the top deciles away. High share prices might look good, but they can trap you," says Karkkainen.

Private equity may be the best way to finance today's costly and time-consuming

plays, notes Karkkainen: "Everything is taking a little bit longer now and requiring more capital, so you have to ask if it all fits into [the sphere of the] public market."

End of the trust era

In 2007, when Global Business Reports last undertook a comprehensive review of Canadian oil and gas for *Oil and Gas Investor* the mood was dampened by the federal government's decision to end the beneficial tax status enjoyed by income trusts. The industry fought the decision tooth and nail but, in the end, failed to change the government's mind. The "Halloween Massacre," as it was to become known, has had a wide ranging and profound effect on the oil and gas sector in Canada.

The income trusts, tax-efficient vehicles focused on return over capital appreciation, shaped how the oil and gas sector developed in Canada. "In the WCSB, over the period from 1995 to 2005, a lot of the conventional assets were sold by the large companies to the trusts, or the large companies converted wholesale into trusts," explains one of Calgary's longest-serving and most successful oil and gas CEOs, William Andrew of PennWest Energy Exploration.

"As trusts, we were looking for properties with shallower declines and good, stable long-term production, and we ended up with a lot of the old legacy oil and gas fields



PennWest Exploration's CEO, W.E. (Bill) Andrew

in the conventional basin."

The trusts' mandate of providing high and steady yields to their holders came at the expense of increased production in those legacy fields. "We were distributing a large portion of our funds flow so we were starving these properties [of investment]," says Andrew.

The trusts were sitting on exactly the sort of assets which, today, are the very profitable purview of horizontal, multistage-fraced wells; large and well-defined reservoirs from which very few further hydrocarbons could be extracted using pri-

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mary recovery methods.

Now that the former trusts are free to determine their own exploration and development budgets, they are utilizing horizontal multistage fracs to increase both the production and the capital values of their large land positions.

"The horizontal drilling technology has helped production rates and has transformed areas where we could not drill before into areas that we are able to drill," says Andrew. "Due to their nature, a lot of the fields were utilizing vertical technology and had very low productivity. That is why the decline was so flat, which meant a long payout time and a low payout on investment.

"The conventional E&P model works when you go out and acquire a land position and drill some exploratory wells and then push the play forward. This did not happen with the trust, as there was not a lot of risk capital or development capital [around]," he adds. With the forced conversion to conventional corporation status, Canada's mid- and large-cap E&Ps are once again starting to drive exploration and development in the basin.

Peyto Energy Trust was one of the highest-yielding trusts from its original conversion in 2003 through to its reconversion back to corporation in 2011. Peyto's president and CEO, Darren Gee, explains that, back in 2003, the company pioneered a hybrid strategy that became commonplace. "When the trust structure was popular in the market (in 2003), we looked at the trusts but didn't like the way the model was set up. Because we are not an acquisition company the model didn't fit," he recalls.

"We had to retain more of our cash flow to drill, so instead we came up with a hybrid trust model with a 50% payout ratio and 50% retained cash flow. The plan was met with skepticism early on, but we proved it was the better model and it has now been widely accepted as a viable option, with most trusts now routinely paying out less money and retaining more. The hybrid model is now the one many companies use, largely because it is more balanced than the pure trusts."

As Peyto reverts back to a corporation, Gee argues that the hybrid model, and the mentality imbued in it, positioned the company well. "We're retaining, like the others, a dividend or some source of income flow to the shareholder. The demand for yield today is very high and so there is a great deal of demand from investors abroad looking for something more from their investments."

The mass re-emergence of the mid- and large caps as a force to be reckoned with in the exploration sector may come at the expense of Canada's celebrated juniors. The federal government's decision to tax trusts "hurt juniors more than it hurt the trusts themselves," says Brian McLachlan, president and CEO of Yoho Resources.

Whereas the junior economic model used to rely on trusts to buy them out once they reached a certain size, these changes meant

that the access to capital diminished. "Combine that with the collapse of the worldwide economy, and it's been an interesting time for juniors," says McLachlan.

Dec. 31, 2010, effectively marked the end of the income trust era as big names such as Baytex and PennWest converted to conventional corporations.

After trusts, a marketplace gap?

Does the demise of the income trusts leave a gap in the investment product marketplace and, if so, will anything be able to fill that niche?

In answer to the first question, Shane Fildes, executive managing director and global head of energy at BMO, says, "There is a big difference between the business model and the legal structure, and while the legal structure is gone, the business model continues. So a lot of trusts converted without changing their payout policy.

"Yielding return of capital to investors made sense in our mature basin. There's still a large conventional asset portfolio that lends itself to a dividend-paying, payout model and that will continue. In 2009-2010 there was a massive shift in portfolios, as conventional assets were being shed to raise capital for unconventional, resource-based assets."

One investment model that is evolving to satisfy investors' desire for income is royalty partnerships. Royalty partnerships are not a new idea, but they have been uncommon in Canada in recent years. Brickburn Asset Management launched the WCSB series of partnerships in 2008 because, "We noticed that there was a large component of proven, undeveloped reserves on companies' balance sheets, which needed capital to develop and turn that reserve into cash flow," says Brickburn's president, Bill Bonner.

The benefits for investors are multiple, according to Brickburn's managing director, Martin Davis. "First, they get cash flow off the wells as well as a tax reduction; they also get Canadian development expense write-offs, which take some capital risks out of the equation for the investor. Over a period of time they'll recover about 40 cents on their dollar investment in tax savings.

"As we gather royalty revenue, we pay it out every month to the investors. When interest rates collapsed after the credit crises, it exposed strong cash-flow streams as being quite desirable. So even though we're hugging the lowest-risk and lowest-rate returns in the energy business, they're still very compelling.

"A lot of operators were able to fund their capital budgets by selling flow-through shares where they were obliged to do an exploration event. As a result, there was lots of capital for exploration but none for development opportunities," continues Bonner. "Another complication was that the cost of wells went through the roof because of new technology. A well that used to cost \$1 million now costs between \$3- and \$4 million. We found a real niche because



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One area where the federal government has been applauded is the Flow Through Shares program, which is designed to help resource companies, including oil and gas juniors, finance their exploration and development activities. Juniors "flow through" to their investors their exploration and development activities, thus providing investors the tax deductions that would normally be available to the company. The program is an important advocacy topic on the agenda for federal meetings, according to SEPAC executive director Gary Leach.

Asian money

Canada, like many a resource-rich country, has witnessed a wave of Asian investment in recent years. Some Asian investors have chosen to buy companies and assets outright, for instance Korean national oil company KNOC's 2009 purchase of Harvest Operations Corp. for \$4 billion. Still, the larger proportion of capital has been invested through joint ventures with Canadian partners.

In part, the trend is driven by Asian governments' desire to achieve a return on their foreign currency positions in the face of low interest rates. CIBC's vice chairman and global head of oil and gas, Art Korpach, says, "Many Asian sovereign funds have large dollar positions and investing in North American energy assets gives them a place to park that capital, generating a higher return and providing a hedge against energy prices."

Korpach argues that Asian investors' appetite for foreign energy assets is more than a mere part of a wider foreign currency strategy. "I think Asian investment is a long-term trend, which is driven by a massive and sustained need for energy. The Chinese need and want lots of energy, and technology is making it more available. They want gas, and improved LNG capability makes it viable for them to own foreign assets and import the gas."

"We believe China is now in its third phase of investment," says Adam Waterous. "The first phase was to get physical barrels of oil for their domestic market, which continues today, and the second phase was to invest in natural gas and export it back to China. The third phase has just started, and it is seeing Asian companies investing where there's no potential to export the commodity, but where they still see an attractive investment. There has been a real move from resource capture and export towards more financial investments."

"Asian NOCs have really moved up the learning curve on deal acumen and the speed and sophistication of transactions that they put forward has changed a great deal over time," observes Waterous. "They are highly experienced, sophisticated and capable buyers, which has helped them in becoming major competitors in acquisitions. Their mandate is to grow, so they're looking to buy."

China might be a major oil producer in its own right, but the in-

dustry there has a lot to learn from the Canadians.

"We've seen these pools of capital do joint ventures in Canada as more of an intellectual capital capture strategy," says BMO's Fields. "At the end of the day, they don't want the physical molecules of gas to go back to their local markets, but rather the intellectual capital of how you drill shale-gas wells, how do you complete them, and how you manage those operations."

"That trend started in U.S. shale gas, but it's coming now to Canada. They are genuinely interested in setting up management teams on the assets they invest in on a joint-venture basis where there is an opportunity for an intellectual capital transfer."

Not only is it important for Canada to attract investment from a variety of sources; the country should be looking to diversify its customer base as well. In the words of Fildes, who is echoed by many in the industry: "As a resource seller it's in our best interest as a nation to have more than one customer."

Canadians: As friendly as they claim?

Canadian attitudes toward foreign investment have been called into question following Investment Canada's recent decision to turn down Anglo-Australian BHP Billiton's hostile takeover of Potash Corp. following intense lobbying by the Saskatchewan provincial government and the Canadian company's management.

The ramifications of the ruling for the oil and gas investor are hard to determine, according to Mike Tims at Peters & Co. "The Potash ruling is causing international companies to realize that they may have difficulty getting approval and a public license to do something that's too big. As a result, joint-venture deals continue to be well received, since smaller companies are easier to acquire because they don't cause much public concern."

"But these smaller companies don't necessarily have the assets that are attractive to international players. They're looking for something with more scale and that has a highly concentrated asset base so that they aren't spreading managerial resources over a large area. There has been money going to the oil sands because these projects provide that sort of scale and represent value for the kind of capital international investors can provide."

John Zahary, CEO of Harvest Energy, says, "Canada has a 'net benefits' test and the government has a responsibility to approve or disapprove acquisitions. There needs to be a benefit to the country and, if there isn't, then they should choose not to approve it. However, I don't think that changes anything."

"The openness to foreign investment is obvious here," adds Zahary, who remained in place as CEO after KNOC's acquisition of Harvest. "Relatively speaking, Canada is the most open country in the world. There are specific hurdles to overcome in all countries, but one ruling should not make people think that Canada is biased against foreign companies." ■

The Service Industry

Canada's cutting-edge service sector is increasingly global.

As might be expected from such a large, open and well-established oil and gas jurisdiction, Canada's energy services industry is huge, cutting edge and increasingly global.

The sector is keen to promote itself on the international stage, and also to gain recognition within Canada of the vital role it plays in the nation's economy. Mark Salkeld, newly appointed president of the Petroleum Services Association of Canada (PSAC), notes, "The oil sector employs 800,000 people directly or indirectly in Canada, the bulk of them in the service sector. It's not well recognized that our industry employs people across Canada or that 5% of the nation's workforce is employed in some way by the industry."

In 2006, the last year for which accurate data was available, the oil and gas sector contributed \$65 billion to Canada's economy, or 5%. As Salkeld notes, "That's huge! It's more than the auto industry and agriculture combined."

Drilling and well services

Canada is well served by the major international conglomerates as well as by a host of homegrown drillers, many of which are now pressing into the international arena. The drilling industry was badly hit by the triple challenges of the global economic crisis, the collapse in gas prices and the royalties hike.

"The debt crisis hit in September of 2008, just as we were about to finance a \$1.1-billion deal," remembers Kevin Neveu, CEO of Canada's largest homegrown drilling company, Precision Drilling. "The global debt markets vaporized, and we were left trying to finance the deal and we managed to do so by the end of December."

"In October of that year, the chain effect of the meltdown began, and oil and gas drilling in North America came to a grinding halt. The slowing of the business was the most severe since 1984. We spent the first half of 2009 integrating the acquisition, winding down operations and trying to make

our debt structure more affordable," he says.

Those that survived the tough times find themselves in a strong position; slimmer and with a loyal client base. "We got it all done. By the time the sector ground to a halt, we had a stable, safe balance sheet," says Neveu.

"Since June 2009, we've nearly doubled our activity and we've repositioned the company from being 70% gas to being 70% oil. Right now we have the most diverse footprint in North America of any service company, including Halliburton, Schlumberger and Baker Hughes," he continues.

In the 2010/2011 winter season, the rig count was up to 2006 levels with longer wells than before the recession. Utilization rates are up at 60% to 70%, very close to full capacity due to labor constraints (see Labor section below).

The good times are back for drillers, but while utilization rates are extremely high, experienced CEOs caution against getting greedy with rates. "If you treat your customers fairly in the good times, they'll remember it come the slow times," cautions Randy Hawkings, CEO of CanElson Drilling.

"With the increase in oil prices we've seen growth in demand, but that doesn't mean it's our turn to do whatever we want with pricing. We still have to respect our customers. At some point the price could get too high and end up being counterproductive to what they're trying to do. It's easy to follow the market and jack up prices, but it's smarter to lead in the area of performance thereby reducing the oil company's overall project costs."

Despite the massive upswing in demand, the message is taking its time to get through to investors and bankers. "The cost of capital has improved, but not to the same degree as it has for the E&P sector," says Brent Conway, executive vice president and CFO, Trinidad Drilling.

"This might be because North America has primarily been perceived as a 70% natural gas story,



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and that's changing. A lot of the returns for E&Ps are now blended returns comprising gas liquids and oil. The investors are back and they're willing to put money in, but the actual evaluation isn't quite back to where we were. Investors right now are confused and scared in terms of where to put money."

While the tough years of 2008 and 2009 weeded out some of the weaker players in the services sector, "It's still pretty competitive out there right now," says Conway. "It's not like anyone hands you anything."

Finding a position in the market is crucial. "There are lots of rigs out there with different styles of competing. Some guys compete more on price and some on capacity. We compete on a niche of quality assets and quality people."

According to Mike Buker, senior VP of corporate development at Phoenix Technology Services, "One of the problems in the directional drilling business is the low barrier to entry. Anyone can rent tools, hire an operator and call himself a directional driller."

"What we've done to differentiate ourselves is to go down the technology route with the R&D team that we've set up. That's allowed us to grow faster than our competitors due to the fact that we have specialty pieces of equipment, as well as training programs and health and safety standards that smaller companies don't have."

Says Conway, "Trinidad is known in the industry for recognizing trends in the market and getting there first."

Trinidad focused on a niche from the outset. "We started growing through the acquisition of companies that were known for their expertise on the deep side of the market. Once that core competency was built up, we began investing in our own rig designs and technologies. So we are a little unique in that we own all of our own technology. Today we can talk about being on version six or seven of complete AC drilling systems, whereas everyone else is only on version one or two."




A super single rig designed and built by Precision Drilling, operating 100 kilometers northeast of Calgary in Rosebud, Alberta, for Encana.

Looking to the future, Conway says, "Pad drilling is becoming much more prevalent here and in the U.S. With that, you're able to drill multiple wells from a single pad, which lessens the environmental impact and makes it safer and more efficient because you don't have to move the rig. Pushing ahead, we are seeing rigs running on natural gas and highline power, which in the end lowers the costs for E&Ps."

For drillers, as with other development service suppliers, Canada's climate creates particular challenges in terms of cash flow and equipment and manpower utilization. During spring, early summer and autumn, the provincial governments impose bans on heavy equipment movement in order to prevent roads, sitting on waterlogged soil, from subsiding. The winter "100 days of hell" are crucial to drillers. As Neveu says, "We'll drill 45% of the wells in Canada during this period."

Going global

The seasonal nature of the business in Canada sets local drillers up well for international expansion, says Neveu. "If you can manage a business that's this cyclic in nature and do it profitably, you're


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doing something right. Most successful Canadian service companies that can manage the cyclical nature of this business and maintain a large profit margin can be very competitive anywhere. My view was to take this model into places like the U.S. where cyclical nature still exists.

"If you're going to drill wells in Canada during such a short season, you have to do so safely...You have to have rigs that will stay running and move quickly...The Canadian winter-drilling season teaches us operational excellence and to ensure financial flexibility throughout the cycle. In oil services, these are two great competitive advantages."

While recognizing the strength that this seasonality has lent Canadian drillers, Neveu acknowledges that, "Canadian companies often struggle to grow from small to large," and suggests, "To go global you have to have business systems and processes and people who are measured in these processes. The industry is very risk-averse. Repeatability and predictability are so important. Having a system that delivers is critical to global growth."

While the Canadian market is very attractive, applying the techniques, technologies and working practices learnt in the WCSB to more emergent markets holds great opportunity.

Veteran Canadian and international driller Walter Dawson explains: "We went to South America to launch our latest venture, Tuscany Drilling, because we find the contracts, day rates and relationships with your clients better than in North America. It's a much better environment, in my opinion."

"The Canadian market is full of entrepreneurs who think they want to be in the drilling business because they think it's profitable, but when tough times come along they drop their prices and ruin the industry. I find the South American market to be much more pleasant."

"Our clientele are working in Ecuador, Colombia, Peru and Brazil, and all of these markets have a great deal of potential. Most of the markets there remind me of Canada in the 1960s when tech-

nology was just starting to be used. It gives us a good marketplace to start with and to grow with."

Dawson notes that the investor has been very attracted to the idea of a purely internationally focused Canadian driller. "With the worldwide need for better drilling equipment, the door was wide open for us to attract the cash. It seems to be getting better each time we go out because people are more comfortable with the idea of Colombia and Brazil."

He acknowledges, however, that capital is always tough to raise. "You have to prove your model, nobody's going to raise capital on a dream." His reputation and contact base help. "Thankfully, I had a good reputation and had brought good returns to investors in my career. It made life a lot easier."

"I've always found Canada to be an excellent proving ground," says John King, CEO of Calmena Energy. Calmena was established with the intention of going global from day one, using Canada as a test bed. "It's a highly competitive environment. Everything that involves doing it faster, cheaper and more effectively is built into this industry."

"We were looking for a platform in Canada that we could use to develop and refine a lot of the services that we thought would become more prevalent in the international markets. Some of those are new services. In many cases they're the traditional oilfield activity. Our customers are very receptive to doing new things and it allows us to pioneer new services very quickly. It really fosters a lot of innovation."

Fracing fares better

The recession years were much kinder to the fracing companies than the drillers. The trend for fracing wells increased the proportion of wells that frac crews visited and the appetite for ever more fracs per well ensured that crews spent more time at each well.

"The Canadian markets treated us quite well, but we were losing cash for a couple of quarters in the U.S.," says Dale Dusterhoft, re-

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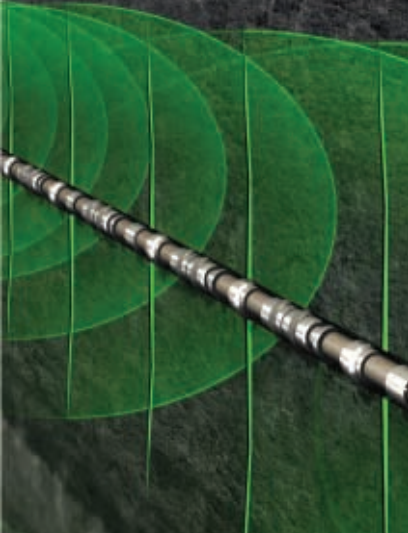
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cently appointed CEO of home-grown frac and well services success story, Trican Well Services.

On taking over as CEO, Dusterhoft had this aim: "Focus the company on a long-term vision and don't worry too much about the short-term cycle that we were in. We spent a lot of time discussing what our 10-year plan was and how we were going to get there. We have a lot of experience managing business through cycles, and the biggest thing we learned was not to decimate your business on the way down, because you need it on the way up... We kept all of our locations open throughout the crisis."

The upturn started early for Trican. "Canada started to pick up in 2009 and continued to grow in 2010. We added a substantial amount of horsepower and capacity to our business and we're able to add people to that."

Despite being a relatively repetitive business, fracturing requires a high degree of innovation and Trican focuses on offering bespoke solutions. "Our model has always been to focus on technology, and particularly on customer-focused technical solutions. If our clients have problems with their wells, we want to have people who can interact with them really well, and can turn those products out quickly. If they have an issue, they can go to our lab and work with our R&D people and hopefully in three or four months find something that will solve their problem."

Trican is now one of the top 100 spending companies on R&D in Canada, in any sector.

"Innovation gives us an advantage in terms of the margins that we get from our work and a competitive advantage in terms of separating ourselves from our competition," says Dusterhoft.

Canadians are willing to spend upfront for improved revenue. "The Canadian market particularly values additional production

from their wells. If they can get 10% more production by spending extra on our products, they're willing to do that," he concludes.

In the U.S., fracturing has come into the public eye over the last couple of years amidst fears over contaminated groundwater and hysterical stories of flaming taps. In the sparsely populated gas lands of northeastern British Columbia and Alberta, the reaction has been far more muted and the provincial governments have not changed their stance toward fracturing.

Dusterhoft is unequivocal in his belief that fracturing is safe: "The science has been very clear that when we're fracturing at deep depths, we're not contaminating the groundwater."

"The issue is more about how we educate the public and change the perception that's put out there by various groups saying that fracturing is bad... We used to be very secretive about our treatments formulas, as this is where the intellectual property value lies. Now we disclose what's going into the well so that the public can understand what we're doing."

Even though the evidence suggests fracturing is safe, Trican is developing potable products, perhaps in part to address the public perception issue. "We have developed some benign fracturing fluids that, if they are mixed in with water, will pass drinking-water tests."

While investors have been reserved when it comes to the drilling story, they have embraced the fracers with open arms in recent months. Trican's share price has risen from a low of \$11 in May 2010 to more than \$23 in March 2011.

For new kid on the block Gasfrac Energy (see Enhanced Oil Recovery section for more about its NGL pumping technology), the upsurge in investor support has been particularly marked with a share price that has risen from \$4.50 to over \$12 in the last

year alone.

"We're inundated with investor support," says Gasfrac president and CEO Reid MacDonald. "We're...able to drill in a number of different formations and we're effective on both conventional and unconventional. We work in horizontal or vertical settings and are very effective in tight shale, water sensitivity and low-pressure situations, which are all places nobody else can go but where all the reservoirs seem to be going to...The original plan was to double every year, but I believe we can actually exceed that."

EPC/EPCM contracts

The major source of the oil and gas EPC/EPCM contracts marketplace in Canada today is the oil sands. Indeed, the contracts coming out of a smallish patch of Alberta are among the largest in the world. It is predicted that \$60 billion will be spent on capital projects in the next 10 years. With that sort of cash up for grabs, a competitive marketplace is becoming ever tougher.

"We've noticed our competitors have changed over the past five to seven years. Where we used to have maybe four, we now have 15," states Randy Karren, managing director of WorleyParsons. "You now have to win contracts in different ways and work harder. Customers are now far more demanding and have higher expectations because of the increase in competition."

EPC/EPCM firms need to reduce the bottom line for clients, Karren notes. "In today's market, customers are very dollar focused and you have to be able to help them out."

"In the past we have tried to execute major projects solely from Calgary or Edmonton, but it's been a real strain on our resource base and our capabilities. We are starting to see pressures in the marketplace again. In the past our reaction would have been to hire more people. Today we're still hiring those people, but we now look at job sharing. So we are looking at how much of the work can be moved and done somewhere else. We've been job sharing around the world, in particular with high value engineering in India and

China and it really brings our dollar per hour price down."

Reducing engineering costs is only part of the way to win contracts in today's environment, Karren argues. WorleyParsons is looking to build long-term relationships with clients. "We enter every one-shot we have with new customers with the idea that we'd like to be their 'Improve' (WorleyParsons' services and maintenance division) contractor in the future..."

"Many of our competitors thrive on making a proposal for a major project, winning it, maximizing profit, finishing the job and moving on to the next one. Our model is to win the job but stick around as their improvement manager for the next 20 years. So we may not always maximize profit, but we establish a strong relationship in order to help them grow and develop in the future. It's a different type of model that certainly isn't for everyone."

Labor

Despite the abundance of very well-paid jobs, low taxes and good social services, Alberta struggles to attract sufficient skilled labor into the oil patch. Perhaps it's the weather. Labor is one of, if not the greatest challenge facing the industry today.

In the oil sands, contractors and operators are feeling the pinch and are having to be ever more vigilant when it comes to enforcing safety practices and standards.

"The more schooled employees, like engineers and mechanics, are definitely harder to obtain," notes Rod Ruston, president and CEO of North American Construction Group, Canada's largest mining contractor and a major employer in Fort McMurray. However, Ruston argues that the oil sands industry is dealing with the labor challenge: "I believe that the industry is keeping up with the challenge of having more people and more operations. I certainly think that we are."

"We have very clear training programs," continues Ruston. "We have pre-start safety talks, and processes in place to deal with anything that happens during a shift. We'll shut down a site if we see

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any indication of an unsafe trend starting to occur. And not just for broken limbs, either. If a lot of people are cutting their fingers, we'll shut a site down and try to understand why it's happening."

Although most jobs in the oil sands can be done year-round and companies can offer full-time employment, in the conventional oil and gas sectors most in-field exploration and development work is seasonal. Although a direct factor of the whims of Alberta's harsh winters—and thus, largely immutable—that lack of stability is a major drawback for many potential employees.

Joe Bruce, president and CEO of the Canadian division of Nabors Drilling, acknowledges the labor crunch and the impact that it is having on the industry as a whole. "Our biggest challenge isn't getting our rigs out there, it's finding skilled people to work them," he says.

"A lot of people left the industry after the downturn, and it's extremely difficult to find experienced people in the current boom of activity. As the sector ramps back up, we lose senior people to the oil companies and other service providers and the drilling contractors are suffering because of it."

John King, president and CEO of drilling firm Calmena Energy Services, notes that crewing up has been a challenge this year: "It's very difficult. It feels like everyone's stealing people from the drilling side. Of our 10 rigs, we're only running nine because we couldn't effectively crew the tenth."

The labor shortage cuts across pay and skill grades. Joe Aiello, president of consultant firm Norwest Corp., says, "We're in the business of selling hours and the disciplines we're in tend to be in really short supply, particularly with regards to experienced people. There just aren't enough people coming out of engineering schools around the world to cover the amount of people that leave the industry every year. So there has really been continued pressure in terms of attracting and retaining employees.

"We're competing with our clients for the same limiting resource, which is a real challenge," he adds. "Supporting schools and providing guaranteed jobs for students enrolled in related programs is a key part of building up a workforce for the industry. In the long run, hiring those students, even if you don't need them, really pays off."

Attracting the right people is about more than just money (which tends to be set by consensus in the industry, anyway). Randy Hawkings, CEO at recently formed 28-rig driller CanElson Drilling, explains: "The oil business is very much based on relationships, so if you can retain talented guys there's a good chance they'll know other skilled guys who want to work with them.

"There's also a lot of respect for the way business is done. We have an open-door policy, know everybody's name, and our senior managers make it out to all the rigs once a month to talk to the guys in the field."

Enfranchising employees works wonders, according to Hawkings. "We pay our staff industry standards and offer savings plans and stock options so that, in the end, everybody on board can be a shareholder. So technically, I work for the guys operating the rigs and it ultimately leads to a shift in thinking. They aren't just laborers anymore, they're shareholders, and there's a lot of pride in that. Working on a rig is a career here in Canada, and it's a good one."

Duncan Au, president and CEO of CWC, notes that while some drillers are struggling to man rigs, his company has managed to crew up this season. "According to Canadian Association of Oilwell Drilling Contractors (CAODC) data on rig utilizations, we have consistently had a higher-than-average utilization this winter....The average range is around 60%, while we're in the high 70s...The way the industry describes utilization, we would have to operate 10 hours a day, 365 days a year to score 100. That's never going to happen. Theoretically, the maximum is somewhere around 75%. So CWC is operating at a full utilization rate."

Au acknowledges, however, that times are tight and employers must be careful not to overwork crews during the three-to-four-month season. "You also have to be mindful of the number of hours that one crew can work at any given time," he says. "Sure, you could have a 24-hour operation, but that would require two or three crews. Where are you going to find the people?"

Calmena's King advocates a cautious approach to new hires.



Joe Bruce, president of Nabors Drilling's Canadian operations



Labor shortages are a challenge for service companies such as Nabors Drilling, here at work in western Canada.

“There are a finite number of resources in the personnel area and it’s stretched pretty thin already...I think you’re going to find more attention directed towards safety issues. It’s presenting challenges in the industry.”

A key part of the solution is smoothing out the seasonal and cyclical nature of the work. As Nabors Drilling’s Bruce puts it, “Over the long term, if there was level loading on activity, people might actually stick around, but we are at the mercy of the cyclical, seasonal environment we’re in. People just aren’t confident in the job security offered by a career in the oilfields, and until we as an industry fix that, we are going to continue to struggle when it comes to competing for labor.”

“People in this sector may get paid well when they are working,” explains Garnet Amundson, president and CEO of well services

company Essential Energy Services, “but if there’s no activity, they aren’t getting paid at all. It’s an industry that doesn’t seem to do well with long-term planning on what we’ll need for workloads to allow customers to deliver on their business plans... Demographics are working against us here in western Canada, where a lot of us are struggling to find the next generation to fill these roles.

“Immigration may help, but government policy certainly needs to be a part of it, and hopefully the industry can become more stable. In a shortage like this, the most we can do is increase wages and buy staff from each other. But that doesn’t help, it only creates inflation.”

One might assume that the economic crisis has given at least temporary respite to the problem. In fact, according to Amundson, it seems only to have exasperated matters. “We were already short

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Dan Themig, one of three founders of Packers Plus Energy Services Inc.

of people in 2005-2007, when Alberta was booming, but when everything slowed down, and the royalty issue kicked in, a lot of folks had to find new places to work."


Technology may play a role in solving the labor crunch. Brent Conway, executive vice president and CFO at Trinidad Drilling, says, "It's difficult to find the guys who have 15 years of experience under their belt in an industry that's been fluctuating the way ours has. Now, new rigs have computer systems that can compensate for that lack of experience. Not only will the system tell you when something is going wrong, but it will also tell you how to fix it.

So it's been worth the money we've invested in those systems."


Canadian technology

Western Canada has become one of the great innovation hubs of the global oil and gas sector, and a lot of the innovation is taking place at the grass-roots level.

Packers Plus is an example of a Canadian company that grew from humble beginnings to become a market leader in its field. "Three of us established Packers in 2000," explains president and CEO Dan Themig. "Our goal from day one was to invest in and develop technology for land-based completions. We felt that there was a real gap in the market and that not enough attention was being focused on the area. Western Canada was the ideal market



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and testing place for our technology, and then we could take that technology to market in Canada, the U.S. and internationally.”

Back in the early 2000s, Themig and his partners, Peter Krabben and Ken Paltzat, developed the StackFRAC system, which facilitated multistage fracturing. Multistage fracs had been around since well before Packers Plus, but the Packers’ game-changing twist was the ability to frac multiple stages without having to remove the rig. The drill crew could come, drill their horizontal well, and hand the work over to the fracers. The days of “drill, pull drill, frac, re-insert drill and repeat” were numbered. The StackFRAC system radically changed the economics of many plays and helped open up the Bakken and Montney.

One of the keys to Packers Plus’ early success was the willingness of clients to test their equipment at the well head: “Our first big break came in 2001 when we installed our first StackFRAC system in an EOG well,” says Themig.

This collaborative attitude is widespread across the basin, and E&Ps understand that experimentation is crucial. As Petrobakken president and CEO Gregg Smith says, “It’s important to have a team that is flexible in their approach and is willing to try and fail, because that is when we find the breakthrough that takes us to the next level in growing and developing a play.”

As long as E&Ps can directly measure the results of their experimentation by extra barrels of oil produced, they seem keen to support new technology. However, when the benefit is less easy to assess and the technology is employed at the beginning of the exploration and development process, innovators may face an uphill struggle achieving market acceptance.

One such example is NXT Energy Solutions, which has developed the Stress Field Detector technology, or SFD, an airborne system that aids the identification of hydrocarbon reservoirs. The system is intended to be a precursor to seismic fieldwork, helping the user narrow down the zone of exploration, rather than replace it.

But NXT has faced difficulties finding acceptance of the SFD in the Western Canadian Sedimentary Basin, where E&Ps are focused on sweating the last hydrocarbon out of relatively small targets. According to CFO Ken Rogers, “In the earlier stages only a handful of companies had us in focus. It certainly wasn’t easy in the past when



Packers Plus has manufacturing operations in Edmonton, Alberta.

the technology wasn’t understood. We had some success and revenue in 2006-2008 and thought we were breaking through the resistance to new technologies in the WCSB. Then 2008 hit and we lost our core market.”

NXT realized that it might find a better acceptance of the technology among those searching for large areas in immature provinces where access and security issues made on-the-ground work difficult. “In 2008 we shifted our entire focus to developing a footprint in Colombia,” says Rogers, going on to explain that “an ideal survey for NXT would be a minimum of 5,000 square kilometers, where someone is looking for a target that might be 2 square kilometers. We focus people on a target.

“Colombia is attractive, because there are concession blocks there that are in the 7,000- to 10,000-square-kilometer range and there’s a dearth of meaningful geophysical information. It can get complicated there because of community, environmental and land concerns that make ground-based surveys difficult, time consuming and expensive. Ideally, you want to obtain good data first before putting boots on the ground, and that’s when SFD has proven most effective.” ■



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First Calgary, Then The World

Juniors are increasingly seeking developing markets.

Canadian juniors are increasingly looking to expand their horizons to opportunities offered abroad, taking advantage of the larger land opportunities and exploration potential of developing markets. While their horizons may span the globe, most executives agree that having a Canadian address gives them a unique advantage not found elsewhere in the world.

Krishna Vathyam, CEO of South America-focused Petrodorado, chose to headquarter in Calgary over Houston and London. "Having a Calgary address is helpful in securing funds. People are willing to talk to you, especially when you're drilling internationally," he says.

The company, which has assets in Colombia, Peru and Paraguay, recently raised \$75 million to fund its drilling activities in that region.

Mark Dolar, CEO of U.S.-focused Nextraction Energy, agrees. "We came to the conclusion that the Canadian junior market was the best place to build a small-scale company and grow it into a large one," he says of the company's decision to base its operations in Calgary. "That element is not available in the U.S. The Canadian market is well-governed and transparent, which is very important when bringing investors into projects."

Much of the attraction can be attributed to the regulatory structure of the TSX Venture Exchange, which is based in Calgary. A

subset of the main TSX, the TSXV is geared towards smaller companies who do not yet qualify for the big board. The companies listed on the TSXV benefit from more efficient access to the larger capital marketplace. For investors, the TSXV provides a well-regulated market for their higher-risk shares.

"A company can grow in this market, then move on to the main Toronto exchange, then naturally to the New York stock exchange. It's a nice transition for growth," says Dolar.

Growth is, of course, the aim of Canadian juniors lured abroad by the promise of large land acquisition and the tantalizing potential of untapped reserves. The sheer number of Canadian and multinational companies operating in the home patch means that there is less opportunity to acquire viable land. "Western Canada's pretty crowded right now, very gas-oriented," says Dr. Richard Walls, CEO of C&C Energia, a Colombia-focused junior.

Canadian juniors are flocking to Colombia after a series of government initiatives aimed at making the oil sector more attractive to foreign companies. The Agencia Nacional de Hidrocarburos (ANH) introduced new, sliding-scale royalty rates that replaced a flat rate of 20% with a scale ranging from 8% to 25%, corresponding to the amount of oil produced. The ANH also mandated regulations providing companies the rights to their entire resource block, including reserves and production, and the subsequent income de-

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rived from it (subject to existing royalty rates). The reforms triggered massive exploration and development and resulted in continual solid growth in the country's reserves.

"It's an attractive place to explore," says Walls. "The economic terms are good, the technical risk is reasonable, the financial risk is reasonable on an international scale, and it's light oil."

Colombia plummeted into virtual civil war in 1948 and has suffered one of the world's longest-running civil wars. Today things are much brighter. "We have nine blocks: four in the Llanos Basin, two in the Magdalena Valley and three in the Putumayo Basin," says Walls. "All of our production is in the Llanos, but we're just starting to explore in the other blocks. The reason the Putumayo has been less developed in recent years is because it had historically been an area with a lot of security issues. That's now subsided a lot and companies have started to come back in and develop the area."

Petrodorado's Vathyam agrees, believing that the returns can be incredibly rewarding for companies in Colombia. "You can spend \$20 million in a block and come back with a \$1-billion valuation. That doesn't happen every day, but if one comes in then it's been worth it."

"We're focusing on Colombia because it has very good fiscal terms, so that if you make even a small discovery, you can make a lot of money as a result," agrees Alastair Hill, CEO of Suroco Energy. "There's a very clear licensing system regulated by the ANH. There are many different basins and blocks, and lots of turnover of acreage and deal flow, all of which are good for small companies."

"We're focused in the Putumayo basin because it's an area that now has a workable

environment. It hasn't seen a lot of drilling in the past 15 years. We'll be drilling eight wells there this year."

Recognizing the risks inherent in such an emergent province, Suroco has chosen to adopt an "exploration plus" model. "The way we've tried to build the company is on a balanced portfolio model," says Hill. "The pure exploration model is very volatile; it can end in spectacular success or dismal failure. It's not as sustainable as the model we're following."

"We have reserves, production, cash flow and a suite of low-risk drilling opportunities. We also have opportunities where we can extend our drilling program to slightly higher-risk drilling appraisal and step-out wells that will be a big focus this year. Then we have classic exploration blocks with medium- to higher-risk opportunities with higher rewards if we're successful."

There are 20 Canadian companies listed on the TSX and TSXV with operations in Colombia. "It's a good location for a small-cap company," says C&C's Walls. "I am not sure if it's a great place for multinationals, because I'm not sure if the opportunities are big enough. But I think we can compete against them as a smaller company."

"The opportunities to grow are better. I don't know how a large-cap company who has to replace 20,000 to 30,000 barrels a day of decline can make those economics work with the overhead."

The track record of Colombia's success has not gone unnoticed by the investment community. Previously, an un-risked resource barrel received a valuation of zero. Since March of 2010, they are receiving valuations ranging from 20 to 50 cents, largely due to the success that the country has had in exploration.

Colombia's neighbors to the south are trying to replicate that success with their



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Generators and office buildings at Dejour Energy's Woodrush operations in the Peace River Arch, British Columbia.



Steam boilers at Cenovus Energy's Foster Creek operations in northeast Alberta.

substantial oil reserves. Argentina is just starting to reclaim its position as a South American energy powerhouse after a devastating financial crisis rocked its economy nearly 10 years ago.

Canadian companies are taking a renewed interest in the opportunities available, undoubtedly spurred on by the "Gas Plus" program put forth by the Argentine federal government. The program is designed to provide a more immediate investment return by offering higher prices for gas production from recently exploited reserves. It allows companies to develop gas resources that wouldn't have been touched under the previous price regulations.

Pure-play Argentine companies are becoming the "flavor of the day," according to Dwayne Warkentin, president and CEO of Argentine-focused Madalena Ventures.

"I was awestruck," says Murray McCartney, CEO of Crown Point Ventures, which operates solely in Argentina. "I hadn't seen such an economic opportunity since the 1980s, when all of the superma-

jors in North America started to divest themselves of their non-core assets. I saw pools with 25% recovery rates and good IP rates."

Crown Point's estimates suggest that under current drilling and operating costs, the Argentine pools had the potential returns of about five times the money, according to McCartney.

"The country has gone through tough times economically during the past eight to 10 years and production and reserves have declined significantly, so I saw an opportunity. They have to get their production and reserves up or else there are going to be serious consequences for them in terms of balance of payment and trade issues," he adds.

Though the rewards may be exponential, operating in developing markets is not without its challenges. Volatile economies, political upheavals, insufficient infrastructure and drumming up interest in projects are all obstacles to working abroad.

Madalena's Warkentin only sends money into Argentina on an

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as-needed basis due to the country's history of privatization and volatile political climate. And despite the excitement surrounding the asset potential in Colombia, production in the country is much more risky. As Vathyam, referring to his assets across Latin America, warns, "The decline curves are unknown. We've seen companies blow up by buying production, so our strategy is to focus on exploration, which has traditionally been very successful."

Today, Argentina is typically described as being "a stage behind" Colombia. As McCartney is keen to point out, however, "Argentina has a lot of advantages that you don't find in other parts of South America. First of all, it's an industry that's been around since 1912.

"You have good infrastructure, a knowledgeable workforce, and good access to rigs. Also, once we've completed and equipped the well, it's only days until we're generating cash flow. I think it's a country that's incredibly blessed with an array of physical assets, and through a sequential set of circumstances has fallen on hard times."

While investors are catching on to the potential in more-established markets like Colombia and Argentina, companies with assets elsewhere still find it challenging to generate interest in their operations outside of the more traditional oil-focused areas. David Johnson, CEO of Sagres Energy, believes that companies must provide investors with "an education" regarding their assets in lesser-known markets. The company has holdings in Jamaica and Guyana as well as Colombia.

"People are surprised at what they find," says Johnson. "Jamaica is on the verge of happening. There's a good tight story there but it's on the fringe."

According to Johnson, Jamaica is a huge strategic resource. The country has a production capacity of 45,000 barrels of oil a day, two refineries that are upgrading their capacity, and three deepwater ports. "The country is hungry for the business." Paraguay is also poised for investor attention. Despite having discovered a basin along the Argentine border that's produced 150 million barrels of oil for their neighbors, there has been no activity on the Paraguayan side. That is set to change, according to Petrodorado's Vathyam. "I knew the potential of the block, so we made a deal to acquire it," he says. "We think it's huge, but is somewhat of a forgotten land due to circumstances, not geology."

Jack Schank, CEO of Sonde Resources, is holding onto to the company's Tunisian assets despite planning to refocus on its Canadian assets. Sonde has a 780,000-acre exploration concession in Tunisia, where it has successfully drilled an exploration well. "As of yet, I'm not sure what it's worth," he says. "I want to see what the first 50% is worth before I figure out if we want to monetize it or not."

On the operating front, companies are faced with longer wait times for approvals and environmental impact assessments to

be processed. The availability of rigs poses a challenge as well. In Argentina, for example, rates of utilization for available rigs hover close to 90%. In some areas of Colombia, production has been halted on occasion due to protests and blockades from a concerned public.

Executives, however, are confident that the rewards outweigh the risks. "You have to be disciplined and rigorous," says C&C's Walls. "As long as governments stay out of the regulatory environment, companies should be fine."

As Madalena's Warkentin puts it, "You're a pariah one year and the next year you're king. We happen to be king at the moment."

Though the challenges of basing a company in Canada while operating abroad are not without merit, executives generally feel that the distinct working environment of the country is an asset that cannot be found anywhere else.

Mike Smith, CEO of Paramax Resources, a gas-focused junior operating in western Idaho, says, "We've got the complexities in the foothills, the shallow gas in the plains of Alberta and the shale-gas plays. I think that when you operate in such a diverse environment it forces everybody to push the envelope to find new ways to extract hydrocarbons from the ground."

John Hodgins, president of Connaught Energy, a Canadian junior with gas assets in the United Kingdom, agrees. "Working in western Canada is a way of keeping your tools sharp," he says. "Canada and the U.S. probably have the best onshore technology in the world in terms of the pace of development, whether it's drilling or in completion techniques or facilities. It works anywhere, in any weather, and the pace of development is so rapid. As long as we're engaged here then we'll be right on the edge of the technology."

Looking beyond North America allows juniors to secure far larger land positions than would be within their reach at home. In India, Bengal Energy has interests in two off/onshore blocks. In Australia, Bengal has interests in five blocks, demonstrating that the juniors are not limited to emerging jurisdictions when seeking to secure large tracts of land. In total the company controls 2.2 million acres net.

Bengal CEO Chayan Chakrabarty explains that transparency is key when building land holdings in jurisdictions such as India. "It is difficult to operate in India, but companies that persevere and can go beyond the bureaucracy can be successful."

"In order for India to have wanted to work with us, they needed to know us. So rather than knocking on doors trying to find deals, we decided to participate in a national bid round. We were able to demonstrate who we are and what we're about through a very transparent process and were able to find a partner. It's a lot easier to get deals in western Canada, but when opportunities like those in India present themselves, you have to act."

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For Bengal, combining local knowledge with North American knowhow and perspective allows the company to leverage its assets. "The Cauvery Basin has about 30 discoveries and is reasonably understood by people from ONGC, who have historically dominated the region, but not by the industry in general," says Chakrabarty. "It is our argument that there is an upside both from an exploration and exploitation standpoint.

"We focused on the Cauvery Basin because of the potential and because we could quietly acquire the kind of land base we need. The geology is not complicated, but some of the play types that we are targeting are different than those that the exploration companies in India are focusing on, so it's a different way of thinking."

The gas sector in North America might be experiencing some of its toughest times in memory, but on the other side of the world, demand for the "green" hydrocarbon is outstripping supply. Demand for natural gas in Asia is leading intrepid Canadians to some of the world's most exotic locations.

Eaglewood Energy is a Calgary-based junior focused on Papua New Guinea. According to CEO Brad Hurtubise, "Papua New Guinea is full of natural gas and...has advanced by leaps and bounds on the energy side in the last couple of years. Since May 2007 when Exxon made their announcement on the \$15-billion PNG LNG project, the country has become an energy hot spot."

"Drilling is expensive when compared to Alberta, but we're exploring for a Tcf of gas, not Bcfs...We've discovered very condensate-rich gas on our PPL 259."

Eaglewood is not reliant on a second-party LNG infrastructure and has found some novel ways to sell its product. "Our early monetization strategy is to strip the liquids, sell them and ship them down river to local or export markets. We're looking to sell gas to the local markets as well.

"All of the electricity generation in the province is powered by diesel, including the OK Tedi mine, and we would like to displace diesel power with gas power. In the last couple of years small-scale LNG technology has made smaller gas discoveries economically vi-

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Canadian juniors are increasingly going global. Here, Sea Dragon Energy's Al Amir facility in Egypt, where it plans water-flooding operations.

able. We have a method whereby we can monetize our resource and turn molecules in the ground to dollars in hand."

Companies should be careful of over-diversification, both geographically and in terms of asset mix. Jack Schank, who recently took over the helm of Canadian Superior Energy and rebranded it as Sonde Resources, is busy refocusing the company on a smaller basket of assets.

When Schank inherited Sonde, it had properties onshore in Canada, a 50% interest in a large offshore block straddling the Libya/ Tunisia boarder, a Trinidad and Tobago LNG project close to securing regulatory approval and a LNG regasification scheme in New Jersey.

Schank explains: "We are in the process of focusing on what we want to do, with the aim of being a Canadian oil-weighted E&P company with a high-profile international asset."

At the time of this interview, in early 2011, Sonde had recently entered into an agreement to sell its Trinidad property. "After the

sale of Trinidad we went from \$3.05 to \$3.60 a share and with the announcement of the success in Tunisia we settled at \$4.20," he notes.

"We have a growth story and I think that our story will be well received...," he says. "It will take another six to nine months before the Canadian Superior legacy is shaken off...but...the word is leaking out." In three or four years time, Schank reckons that, "Sonde will have added two or three assets in Canada and four or five times our current level of production (500 BOE/d), though Tunisia could dwarf that."

Conclusion

Conforming to the national stereotype, the Canadian oil and gas sector is understated. But make no mistake about it, the sector is huge and set for sustained growth. Canada has more known oil in place than any other jurisdiction in the world. While making long-term predictions in the oil game is a fools' game, it is not inconceiv-



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C&C Energía Ltd. operates in Colombia, South America with offices in Bogotá, Colombia and Calgary, Alberta, Canada. C&C currently operates 95% of its oil production, holds interest in nine blocks in Colombia totalling 766,500 acres (678,300 net acres), and has over 60 full time employees in Colombia. C&C's production growth since incorporation in 2005 has come by way of drilling success on the Company's lands.

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able that the country could one day become the largest oil producer in the world.

The country faces numerous hurdles if it is to achieve this goal and return its gas sector to growth. The most immediate challenge is labor. The industry and the various governments are keenly aware of this, though it will likely remain a constraint on growth in the near term.

The second challenge is access to new markets and the building of existing markets (in the case of gas). Canada is totally dependent on the U.S. for markets. The relationship between the U.S. and Canada is good, and the U.S., still the world's largest market, has a great respect for fair and open trade. However, it's not healthy to have only one customer, and Canadian oil is increasingly being branded as "dirty" south of the border. The North American gas supply glut looks to be a long-term, structural issue and it is essential that Canada builds LNG infrastructure to evacuate its product to Asian markets. The nation could also do a better job at building

domestic demand for gas.

Canada's third, and most intangible, challenge is the image of the oil sands. The industry must continue to innovate to bring its well-to-wheels carbon footprint down, and the country must do more to ensure that the sector is fairly portrayed in the international media.

Canada is currently the world's sixth-largest producer of oil and the fifth-largest producer of gas. However, it should be recognized that all of the countries above Canada in both metrics, apart from the U.S., bar or severely limit the participation of foreign private capital in their hydrocarbon sectors. For the investor looking for foreign growth targets and confidence that their property rights will be respected, Canada heads a very short list.

Despite the challenges, the future looks very bright for the Canadian oil and gas sector. In a world of increasing consumption and declining conventional reserves, Canada's vast unconventional asset base will drive the nation for years to come. ■

Devon Energy Corp.'s description and samples of oil sands.





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B.C.'s 'Tremendous Opportunities'

In an interview, Steve Thompson, British Columbia's minister of forests, land and natural resource operations, discusses the province's commitment to oil and gas.

How important is oil and gas to B.C., both economically and politically?

It is a very important natural resource sector for the province, contributing over half of our provincial natural resource revenue. We need to make sure that we have a competitive climate for the investment and growth of the industry. We see tremendous opportunities for the province, particularly in the area of unconventional shale exploration in the northeast sector, and we expect it to become a very significant component of our provincial economy and government revenues.

Is the perception that B.C. is not natural resource-friendly still prominent today?

That wouldn't be a very fair portrayal of the situation today. We've worked very closely in partnership with the industry to ensure that there is a competitive regulatory environment, royalty regime, and tax policy that help spur investment. We have done this without compromising environmental standards and sustainability. We have brought in a new oil and gas activities act, which regulates the industry and is recognized as a balanced approach to regulation.

We also have a clean energy act, which sets the overall framework for the development of our energy plan. I think it's fair to say now that the industry recognizes the importance of the social license and environmental standards that it has to maintain. Last year we had the fourth-highest revenues for land sales, and we know that companies are here for the long term.

Do you think the people of B.C. understand the significance of oil and gas to the province?

I think they do. The investment and potential in the sector is recognized. People see how important it is to the province, as well as the work that we're doing on the environmental side of it. We are also doing a lot of work with the First Nations in terms of building those economies and creating jobs. There are significant projects like the Kitimat LNG plant where First Nations are directly involved, and there's community support for it because they recognize the long-term benefit.

"We're the gateway to the Asia-Pacific with our infrastructure and ports, so it's an important part of our future."

You represent the province to E&P companies. How do they react to the idea of investing in B.C.?

The outside investment community sees the potential here. Under the current market with low gas prices it's challenging, because we are at the end of the pipeline, so to speak, in terms of distance from markets, yet we're continuing to see investment despite that. We're also looking at new markets like the Asia-Pacific as an important part of the future of the industry, especially if we



Steve Thompson, B.C. minister of forests, land and natural resource operations, says the province is the gateway to Asia-Pacific markets.

work together with Alberta and Saskatchewan. We're the gateway to the Asia-Pacific with infrastructure and ports, so it's an important part of our future.

As a major gas producer, does the struggling gas market present a challenge for the province?

I think it presents a challenge to the province, as well as the companies that are investing here. But if you look at the level of opportunity and investment that they've made in land sales, you can see that the long-term outlook for B.C. is positive so long as we keep a balanced approach to regulation and we keep a competitive environment.

We're expecting in 2011 to see the same number of new wells drilled as last year and we know there will be new technology to drive down costs so companies can stay competitive.

What is your final message about investing in B.C.?

The province remains committed to ensuring that we have a regulatory and competitive environment that will continue to provide opportunities for investment and growth in the industry. We are continuing to work with companies so that we can build on the tremendous opportunities that exist in B.C., both in partnership with industry and in partnership with our fellow provinces. ■



Trinidad Drilling's Rig #46 operating in the Montney shale in northeastern British Columbia.