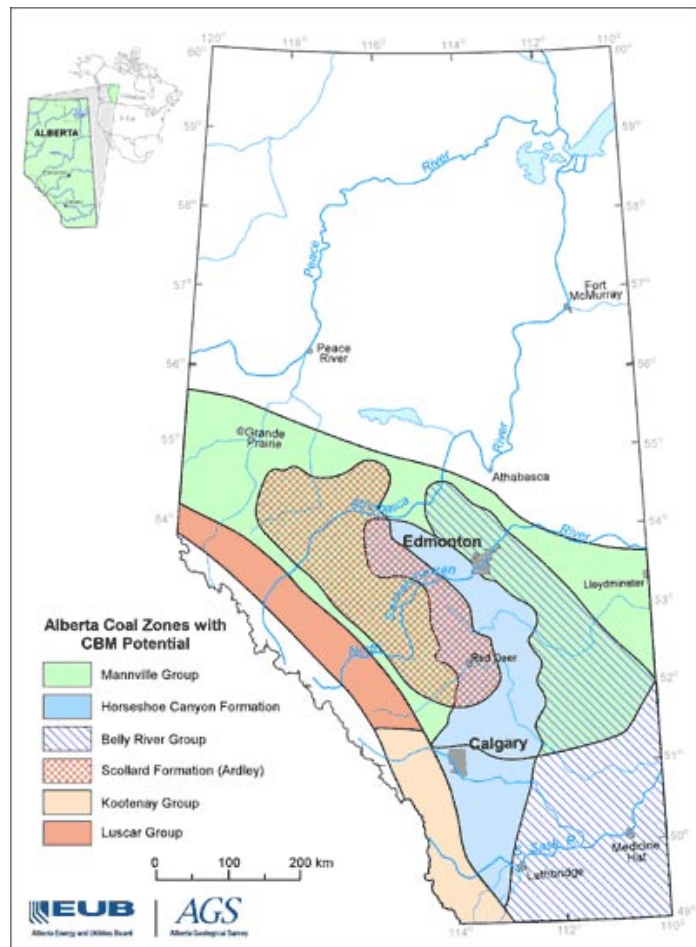


SEVEN THINGS YOU SHOULD KNOW BEFORE INVESTING IN COALBED METHANE

Canada's Alberta province has become a hotbed of coalbed methane gas exploration. Will the Horseshoe Canyon formation become to coalbed methane what Saskatchewan's Athabasca Basin is to uranium?



By James Finch

More investors are now inquiring about Coalbed Methane exploration companies. Just as uranium miners were flying well below the radar screen in early 2004, coalbed methane exploration may very well be the next very hot sector later this year and next. Historically, coalbed methane gas endangered coal miners, resulting in alarming fatalities early in the previous century. This is the fate suffered today by many Chinese coal miners in the smaller, private coal mines. Typically, the methane gas trapped in coal seams was flared out, before underground mining began, in order to prevent those

explosions. Rising natural gas prices have long since ended that practice.

Today, coalbed methane companies are turning a centuries-long nuisance and byproduct into a valuable resource. About 9 percent of total US natural gas production comes from the natural gas found in coal seams. Because natural gas prices have soared, along with the bull markets found in uranium, oil, and precious and base metals, coalbed methane has come into play. It is after all a natural gas. But because it is outside the realm of the petroleum industry, coalbed methane, or CBM as many industry insiders call it, is called the unconventional gas. It may be unconventional today, but

as the industry continue to grow by leaps and bounds, on a global scale, CBM may soon achieve some respect. Please remember that a few years ago, there was very little cheer-leading about nuclear energy. Today, positive news items are running far better than ten to one in favor of that power source.

CBM is the natural gas contained in coal. It consists primarily of methane, the gas we use for home heating, gas-fired electrical generation, and industrial fuel. The energy source within natural gas is methane (chemically, it is CH₄), whether it comes from the oil industry or from coal beds.

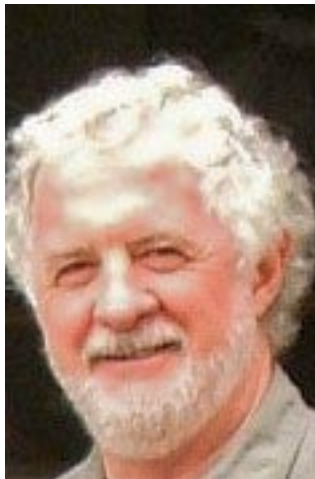
CBM has several strong points in its favor. The gases produced from CBM fields are often nearly 90 percent methane. Which type of gas has more impurities? No, it isn't the natural, or conventional, gas you thought it might be. Frequently, CBM gas has fewer impurities than the "natural gas" produced from conventional wells. CBM exploration is done at a more shallow level, between 250 and 1000 meters, than conventional gas wells, which sometimes are drilled below 5,000 meters. CBM wells can last a long time – some could produce for 40 years or longer.

Natural gas is created by the compression of underground organic matter combined with the earth's high temperatures thousands of meters below surface. Conventional gas fills the spaces between the porous reservoir rocks. The coalification process is similar but the result is different: both the coalbed and the methane gas are trapped in the coal seams. Instead of filling the tiny spaces between the rocks, the coal gas is within the coal seams.

One of the past problems associated with CBM exploration was the reliance upon expensive horizontal drilling techniques to extract the methane gas from the coal seams. Advanced fracturing techniques and breakthrough horizontal drilling techniques have increased CBM success ratios. As a result, a growing number of exploration companies are pursuing the early bull market in CBM. Market capitalizations for many of these companies mirror similar "early plays" we mentioned during our mid 2004 uranium coverage in StockInterview.com (June through October, 2004). Industry experts told us there would be a uranium bull market. Now, we are hearing the same forecasts about CBM.

Seven Tips by Dr. David Marchioni

We asked Dr. David Marchioni to provide our subscribers with his 7 Tips to help investors better understand what to look for, before investing in a CBM play. Dr. Marchioni helped co-author the CBM textbook, *An Assessment of Coalbed Methane Exploration Projects in Canada*, published by the Geological Survey of Canada. He is also president of Petro-Logic Services in Calgary, whose clients have included the Canadian divisions of Apache, BP, BHP, Burlington, Devon, El Paso Energy, and Phillips Petroleum, among others. He is also a director of Pacific Asia China Energy and is overseeing the company's CBM exploration program in China.



Dr. David Marchioni, one of Canada's leading coalbed methane geologists

Our series of telephone and email interviews began while Dr. Marchioni sat on a drill rig in Alberta's foothills, the Mannville region, until he finished outlining his top 7 tips, or advice, on how to think like a CBM professional.

1) COAL SEAM THICKNESS

Is there a reasonable thickness of coal? You should find out how thick the coal seams are. With thickness, you get the regional extent of the resource. For example, there must be a minimum thickness into which one can drill a horizontal well.

2) GAS CONTENT

Typically, gas content is expressed as cubic feet of gas per ton of coal. Find how thick it is and how far it is spread. Then, you have a measure of unit gas content. Between coal seam thickness and gas content, you can determine the size of the resource. You have to look at both thickness and gas content. It's of no use to have high gas content if you don't have very much coal. The industry looks at resource per unit area. In other words, how much gas is in place per acre, hectare, or square mile? In the early stage of the CBM exploration, this really all you have to work with in evaluating its potential.

3) MATURITY LEVEL OF THE COAL

This is the measure of the stage the coal has reached between the mineral's inception as peat. Peat matures to become lignite. Later, it develops into bituminous coal, then semi-anthracite and finally anthracite.

There is a progressive maturation of coal as a geological time continuum and the earth's temperature, depending

Guizhou Project



Huangshi Project

Pacific Asia China Energy (TSX: PCE) was the first publicly traded Canadian company to be awarded a coalbed methane concession in China by the official state agency, China United Coalbed Methane. Now, the company has two concessions, and a drilling commencement has been announced on the larger of its concessions.

upon depth. By measuring certain parameters, you can determine where it is in the chemical process. For instance, the chemistry of lignite is different from that of anthracite. This phrasing is called “coal rank” in coal industry terminology.

4) PERMEABILITY

When you are beginning to think about CBM production, this and the next item must be evaluated. How permeable is the CBM property? You want permeability, otherwise the gas can’t flow. If the coal isn’t permeable at all, you can never generate gas. The gas has to be able to flow. If it is extremely permeable, then you can perhaps never pump enough water. The water just keeps getting replaced from the large area surrounding the well bore. The water will just keep coming, and you will never lower the pressure so the gas can be released.

5) WATER

In a very high proportion of CBM plays, the coal contains quite a lot of water. You have to pump the water off in order to reduce the pressure in the coal bed. Gas is held in coal by pressure. The deeper you go, typically the more gas you get, because the pressure is higher. The way to induce the gas to start flowing is to pump the water out of the coal and lower the “water head” of pressure. How much water are we going to produce? Are we going to have to dispose of it? If it’s fresh, then there may be problems with regulatory agencies. In Alberta, the government has restrictions on extracting fresh water because others might want to use it. One could be tapping into a zone that people use as water wells for farms and

rural communities. Both water quality and water volume matter. For example, Manville water is very salient so nobody wants to put it into a river; this water is pushed back down into existing oil and gas wells in permeable zones (but which are also not connected to the coal).

6) FUNDING

To be able to access land and do some initial drilling, i.e. the first round of financing, it would cost a minimum of C\$4 million. This would include some geological work and drilling at least five or six wells. In Horseshoe, that would cost around C\$4 million (say 1st round of finance); in Manville, about C\$9 million. This is under the assumption that the company doesn’t buy the land. The land in western Canada is very expensive and tightly held. Much of the work is done as a “farm in” drilling on land held by another for a percentage of the play. (Editor’s note: During a previous interview, Dr. Marchioni commented about his preference for Pacific Asia China Energy’s land position in China because comparable land in western Canada would have cost “\$100 million or more.”)

7) INFRASTRUCTURE

The geology only tells you what’s there, and what the chances of success are. You then have to pursue it. Can we sell it? Gas prices are “local,” meaning they vary from coun-

try to country, depending whether it is locally produced and in what abundance (or lack thereof). How much can we extract? How much is it going to cost us to get it out of the ground? Are there readily available services for this property? Will you have to helicopter a rig onto the property at some incredible price just to drill it? Will you have to build a pipeline to transport the gas? Or, in China as an example, are there established convoys for trucking LNG across hundreds of kilometers?

One addition, which StockInterview.com has mentioned in previous articles, and especially in the Market Outlook Journal, "Quality of Management Attracts PR," it is important that the CBM company have experienced management. This would mean a management team that includes those who have gotten results, not only a veteran exploration geologist but a team that can sell the story and bring in the mandatory financing to move the project into production.

There are two primary reasons why many of these coalbed methane plays are being taken seriously. First, the macro-economic reason is that rising energy costs have driven companies in the energy fields to pursue any economic projects to help fill the energy gap. Coalbed methane has a more than two decades of proof in the United States. The excitement has spread to Canada, China and India, where CBM exploration is beginning to take off. Second, the fundamental reason is that exploration work has already been done in delineating coal deposits. There are, perhaps, 800 coal basins globally, with less than 50 CBM producing basins. In other words, there is the potential for growth in this sector.

Market Capitalization of Publicly Traded Canadian CBM Companies		
Name	Ticker Symbol	Approximate Market Cap
Verona Development	TSX: VDC	C\$ 25 million
Ivana Ventures	TSX: ANA	C\$ 28.6 million
Richards Oil and Gas	TSX: RIX	C\$ 67 mm
Pacific Asia China Energy	TSX: PCE	C\$ 71.1 mm
Canadian Spirit	TSX: SPI	C\$ 100mm
Ember Resources	TSE: EBR	C\$ 185 mm
Mahalo Energy	TSE: CBM	C\$ 235 mm

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