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Quebec Oil and Gas Association Conference: *The Law of Large Numbers - It's a Statistical Play*

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Outline

- Key Factors affecting Natural Gas
- Unconventional Resources
- The Law of Large Numbers It's a Statistical Play
- Key Investment Drivers for the Utica Shale
- Summary



Natural Gas Outlook

- Significant Decrease in Capex Spending and Drilling Rig Activity in 2009: Leads to a general expectation of significant declines in production and anticipation of higher natural gas prices.
- Look for an Extended Weakness in Natural Gas Pricing in the Short Term: Emergence of unconventional resources play (shale gas), improved rig efficiency, increased horizontal drilling, high inventory levels.
- Fundamental Change in Long Term Natural Gas prices



Source. Bloomberg, Research Capital Corporation

A Fundamental Shift In Natural Gas Pricing - Newest Supply Is Not The Most Expensive

- Unconventional Producers are the Low Cost Providers of Natural Gas: In the past, the pricing trend excluding hurricane related events has been predictable as higher prices were needed to encourage higher cost production (conventional producers).
- Unconventional Producers do Not Need as High Natural Gas Prices to be Economic
- Growth In Natural Gas Production from 2007: Increasing amounts of shale gas production lead to a large increase of production between 2007 and 2009.



US Domestic Dry Natural Gas Production

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Source. U.S. Department of Energy: Energy Information Administration, Research Capital



Falling Rig Count Has Not Materially Decreased Production

- The active rig count started falling in September 2008, but United States dry natural gas production has only decreased 2% from its peak.
- Transition to Horizontal Wells: While we expect the lack of drilling to eventually catch up with production, the transition to horizontal wells from vertical wells have helped cushion the impact of a less active drilling fleet.



Source. Bloomberg, Baker Hughes, Research Capital



Improving Efficiencies Mean Fewer Rigs Required

- Increasing Drilling Efficiencies: While the improvements are pretty widespread among producers, the graphs below show how EnCana has been able to significantly decrease their cycle time per well. Such improvements mean that an average rig this year is more productive than an average rig last year.
- Increasing Lateral Lengths: The increasing length of laterals generally translates into higher levels of production per well since it usually means that a greater number of fractures are being utilized.
 - If each fracture is interpreted to be similar to a vertical well, the transition from 5– 8 stage fracs last year to 10 – 15 stage fracs this year to even talks of over 20 fracs per well represent a great deal of vertical rigs.



Southwestern Energy - Fayetteville shale lateral lengths



Source. Southwestern Energy, Research Capital

Source. EnCana, Research Capital



Drilling Increasing at High Productivity Areas

- The Collapse in Active Rigs is also not Uniform Across all Regions: As shown below, the number of active rigs has actually increased in some of the emerging shale plays.
- The reallocation of rigs can be substantial because each play has different production rates. For instance, Chesapeake Energy is able to achieve average IP rates of 14 mmcf/d at the Haynesville play while it only obtains 2.5 mmcf/d at the Barnett.
- The numbers are not directly comparable since more work is typically required for higher production, but it highlights how drilling in different regions can significantly affect rig efficiency.



Source. Smith Bits, Wood Mackenzie, Deutsche Bank



Major Short Term Risk in Inventory Reaching Capacity

- One of the biggest factors keeping prices low in the short term is how there is a risk of inventory filling to capacity.
- The EIA estimates peak capacity of 3.9 tcf, which is roughly what inventory is expected to reach if natural gas injections continue at the 5-year average rate.
- The beginning of the withdrawal season in November will remove considerable pressure from natural gas prices, but the resulting high level of inventory will take some time to work through.
- Assuming injections were 3 bcf/d (5% of U.S. natural gas production) below the 5-year average starting today until the end of the withdrawal season in April, inventories will still be roughly in line with the 5-year average inventory.



Historical U.S. Natural Gas Inventories

Source. EIA, Research Capital



Factors Capping Natural Gas Prices

- Emergence of Unconventional Resource Plays
- More Efficient Rigs
- Increasing Amount of Horizontal Drilling
- Longer Length Horizontal Wells with More Fracs per Well
- Allocation of Capex to High Productivity Areas
- High Inventory Levels
- Significant Amounts of Shut-In Production to be Brought On-Stream
- LNG

Unconventional Natural Gas Growth outpaces Conventional

- Out of the factors that we have mentioned, We believe that the emergence of unconventional resources, specifically shale gas is the biggest factor changing the long term natural gas price.
- In part due to declining conventional production and in part due to emerging shale natural gas plays, the U.S. began producing more unconventional natural gas than onshore conventional natural gas in 2005.



Natural gas production by source, 1990-2030 (trillion cubic feet)

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Source. U.S. Department of Energy: Energy Information Administration



Why Have Unconventional Resources Emerged?

- The Easy Conventional Sources are Gone
- Repeatability
- Scalability
- Significant Resource in Place and Reserve Upside
- Economic at Lower Commodity Prices due to Manufacturing Nature



Shale Gas Primer

- General characteristics of a shale gas reservoirs include:
 - Long production life (up to 30 years)
 - ◆ Low production decline rates of generally less than 5% per year
 - Potential for large gas reserves and reserve upside
 - Require stimulation (fracing) to be economic



The Law of Large Numbers – It's a Statistical Play

- Unconventional resource plays exhibit a positively skewed distribution curve.
- Majority of the well results will be lower producing, some mid case producing wells and a small number of higher producing wells.



Source. Research Capital Corporation

Source. Research Capital Corporation



Barnett Development



Figure. Barnett Development Source. Oil and Gas Journal



Keys to a Statistical Play

- Significant land position
- Large drilling program
- Deep pockets
- Decrease drilling and completion cost per well as well as operating costs through implementation of technology and ownership of infrastructure to reach an economic hurdle



Figure. Barnett Development Source. Oil and Gas Journal



Key Investment Drivers for the Utica

- Significant Resource Potential: Based on Forest Oil estimates, there is an average of 93 bcf of original gas in place (OGIP) per section. The company cites preliminary estimates of net resource potential for its acreage of 4.1 tcf of recoverable shale gas (at a recovery efficiency of 20%) and a net 1.7 bcf/well on 100-acre well spacing. Talisman has estimated 75-350 bcf of OGIP per section on its acreage. Questerre released a preliminary resource report from Netherland, Sewell & Associates stating that OGIP volumes ranges between 96 bcf 210 bcf with a best estimate of 150 bcf per section.
- Large Prospective Land Position for Utica Shale: The Utica Shale play encompasses an area of some 1.5 million acres in the St. Lawrence Lowlands. Forest Oil estimates that its land position of 339,000 (269,200 net) acres are 70% prospective for Utica Shale.
- Existing Infrastructure and Premium Pricing: There is significant pipeline and existing infrastructure to access one of the largest natural gas markets, the northeast United States. Though the pipelines in the Utica Basin are regulated, they approximate NY Border Pricing, which has averaged over \$0.75-\$1.00/mmbtu premium to NYMEX Henry Hub since the beginning of 2003.
- **Favourable Fiscal Regime:** Low royalty rates and drilling credits for exploration wells.

Standardizing the Play – Part 1

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Source. Ministère des Ressources naturelles et de la Faune du Québec, Canadian Discovery

- Stage 1: Core area identified within the Utica Shale trend, located between Logan's Line in the east and the Yamaska Growth Fault in the west.
- Stage 2: Non-core area identified within the Utica Shale trend, located west of the Yamaska Growth Fault to the Zero Edge Utica Line.
- Stage 3: The Stage 3 area is a category that encompasses prospective exploration targets which include areas east of Logan's Line and other areas within and outside the St. Lawrence Lowlands.



The Application of a Statistical Play

- We base our valuation on each company's land acreage exposure in Stages 1 and 2. No value is attributed to Stage 3 as these lands are more speculative.
- Horizontal and vertical well profiles are used for Stages 1 and 2 respectively.
- Initial production is estimated using a simplified right-skewed probability distribution (since there is a greater chance that a given well will come on with lower initial production).
 - Low case type wells will occur with a 60% probability, mid case wells with a 30% probability, and high case wells with a 10% probability.





Source. Research Capital Corporation

Stage 1 – Horizontal Well Production Profile (Barnett Analog)

- Our Stage 1 wells use the Barnett Shale in the Fort Worth Basin as an analogy for Utica Shale production. We derive a production curve accepting that there are some significant differences in rock properties. However, we feel that it is the most comparable proxy that we can use at this time given the lack of data available.
- The mid case horizontal type well exhibits strong IP rates, followed by a steep initial decline period, and then a long-term stabilized decline over a long period. We assume a mid case IP of approximately 1.5 mmcf/d with recoverable reserves of 2.5 bcf per well. We also show a high case and low case production profile, which IP at 2.1 mmcf/d and 0.9 mmcf/d, respectively, with ultimate recoverable reserves of 3.4 bcf and 1.5 bcf per well, respectively.



Stage 1 - Horizontal Production Profile

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Figure. Stage 1 – Horizontal Well Production Profile Source. Research Capital

Stage 2 – Vertical Well Production Profile (Antrim Analog)

- Our Stage 2 wells use the Antrim Shale as an analogy for Utica Shale production. We assume that well development will typically consist of vertical wells between the Yamaska Fault Line and the Zero Edge Utica Line.
- We assume a mid case IP of approximately 0.15 mmcf/d with recoverable reserves of approximately 0.4 bcf per well. We also show a high case and low case production profile, which IP at 0.2 mmcf/d and 0.1 mmcf/d, respectively, with ultimate recoverable reserves of 0.5 bcf and 0.3 bcf per well, respectively.



Stage 2 - Vertical Production Profile

Figure. Stage 2 – Vertical Well Production Profile Source: Research Capital

Research Capital



Well Economics

Stage 1 - Horizontal V	Well Economics
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		RCC Estimate	Natural Ga	Natural Gas Price		al Cost	Initial Proc	duction
Natural Gas Price	(\$/mcf)	\$6.00	\$4.00	\$8.00	\$6.00	\$6.00	\$6.00	\$6.00
Capital Cost	(\$mm)	\$4,000	\$4,000	\$4,000	\$3,000	\$5,000	\$4,000	\$4,000
Operating Cost	(\$/mcf)	\$1.75	\$1.75	\$1.75	\$1.75	\$1.75	\$1.75	\$1.75
Initial Production	(mmcf/d)	1.5	1.5	1.5	1.5	1.5	0.8	2.3
Cumulative Production	(bcf)	2.5	2.5	2.5	2.5	2.5	1.2	3.7
Before-Tax IRR	(%)	13%	1%	26%	22%	9%	1%	26%
Payback Period	(years)	Exceeds 3 years	Exceeds 3 years	2.9	Exceeds 3 years	Exceeds 3 years	Exceeds 3 years	2.9

Stage 2 - Vertical Well Economics

			Sensitivities								
		RCC Estimate	Natural Ga	s Price	Capita	al Cost	Initial Production				
Natural Gas Price	(\$/mcf)	\$6.00	\$4.00	\$8.00	\$6.00	\$6.00	\$6.00	\$6.00			
Capital Cost	(\$mm)	\$500	\$500	\$500	\$400	\$600	\$500	\$500			
Operating Cost	(\$/mcf)	\$1.75	\$1.75	\$1.75	\$1.75	\$1.75	\$1.75	\$1.75			
Initial Production	(mmcf/d)	0.15	0.15	0.15	0.15	0.15	0.10	0.20			
Cumulative Production	(bcf)	0.4	0.4	0.4	0.4	0.4	0.3	0.5			
Before-Tax IRR Payback Period	(%) (years)	16% Exceeds 3 years	3% Exceeds 3 years	29% 2.8	23% Exceeds 3 years	12% Exceeds 3 years	8% Exceeds 3 years	25% Exceeds 3 years			

Figure. Horizontal and Vertical Well Economics Source. Research Capital Corporation



Valuation Methodology

- We calculate a weighted-average net present value per well that takes into consideration the more likely chance that lower productivity wells tend to occur with greater chance.
- With the estimated reserves per well, we calculated how many drilling locations the company has based on its acreage in each Stage and assuming 100-acre drilling spacing. From the number of potential wells and the weighted average reserves per well, we were able to estimate an unrisked resource potential for each Stage. We then applied a prospectivity factor of 50% and a success factor of 70% to account for geological and operational risks associated with drilling in this unproven basin. From this, we estimated a risked resource estimate and a corresponding NPV for each stage, as well as NPV per F.D. share.
- Total valuation is equal to the sum of NPV per F.D. for each Stage, plus the value of any existing production (in the case of Questerre).

Stage 1 - Horizontal Well	NPV Assum	ptions	
_ow Case IP	(mcf/d)	900	
Mid Case IP	(mcf/d)	1,500	
High Case IP	(mcf/d)	2,100	
Well Spacing	(acres/well)	100	
Resource Value in Ground	(\$/mcf)	\$1.00	
Prospectivity Factor	(%)	50%	
Success Factor	(%)	70%	

Figure. Horizontal Well NPV Assumptions Source. Research Capital Corporation

Stage 2 - Vertical NPV Assumptions

Low Case IP Mid Case IP High Case IP Well Spacing Resource Value in Ground	(mcf/d) (mcf/d) (mcf/d) (acres/well) (\$/mcf)	100 150 200 100 \$1.00
Resource Value in Ground	(\$/mcf)	\$1.00
Prospectivity Factor	(%)	50
Success Factor	(%)	70

Figure. Vertical Well NPV Assumptions Source. Research Capital Corporation



Land Positions in the St. Lawrence Lowlands

- In the following figure we summarize and assign the acreage position of the various companies. We find that Talisman has the largest exposure to Stage 1 area, while Questerre has the largest exposure to the Stage 1 area out of the junior oil and gas players within the fairway.
- There are six companies that have acreage in the area that we have defined as Stage 1, for a total acreage of approximately 769,500. In the Stage 2 area, six companies have acreage in the area, for a total acreage of 1,163,875. In what we defined as Stage 3, there are seven companies with acreage, for a total of 3,709,475. Gastem has the largest position of Utica Shale in New York.

Company	Stage 1	Stage 2	Stage 3	Total
Questerre	160,425	69,025	107,000	336,450
Junex	59,700	240,175	655,375	955,250
Gastem	32,450	0	284,000	316,450
Talisman	339,500	387,325	0	726,825
Forest	188,875	0	80,325	269,200
Altai	0	178,700	0	178,700
Epsilon	8,125	0	71,000	79,125
МоІорро	0	122,475	1,999,000	2,121,475
Petrolympic	0	166,175	512,775	678,950
Total	789,075	1,163,875	3,709,475	5,662,425

St. Lawrence Lowlands Acreage Summary (Net Acres)

Figure. St. Lawrence Lowlands Acreage Breakdown Source: Research Capital

Potential Value Proposition – Stage 1

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Company	Ticker	Net Acres ¹	Number of Wells ²	Unrisked Resource	Prospectivity	Success Factor	Risked Resource	NAV ³	F.D. Shares	NAV/ F.D. Share	Share Price ⁴	Utica Exposure⁵
				(bcf)	(%)	(%)	(bcf)	(\$mm)	(mm)	(\$)	(\$)	(%)
Altai	ATI-V	0	0	0	50%	70%	0	\$0	50.0	\$0.00	\$0.33	0%
Epsilon	EPS-T	8,125	81	157	50%	70%	55	\$55	48.4	\$1.13	\$2.10	54%
Forest ⁶	FST-N	188,875	1,889	3,645	50%	70%	1,276	\$1,276	88.4	\$14.43	\$24.81	58%
Gastem	GMR-V	32,450	325	626	50%	70%	219	\$219	68.1	\$3.22	\$0.60	536%
Junex	JNX-V	59,700	597	1,152	50%	70%	403	\$403	63.2	\$6.38	\$1.46	437%
Molopo'	MPO-AU	0	0	0	50%	70%	0	\$0	182.8	\$0.00	\$1.21	0%
Petrolympic	PCQ-V	0	0	0	50%	70%	0	\$0	80.0	\$0.00	\$0.25	0%
Questerre	QEC-T	160,425	1,604	3,096	50%	70%	1,084	\$1,084	214.6	\$5.05	\$2.47	204%
Talisman	TLM-T	339,500	3,395	6,552	50%	70%	2,293	\$2,293	1018.0	\$2.25	\$20.08	11%

Stage 1 Company Exposure

1. Stage 1 net acreage is based on estimates of land position between the Yamaska Growth Fault and Logan's Line.

2. 100-acre spacing

3. Valued at \$1.00/mcf in the ground.

4. As of Oct 16, 2009

5. Utica Exposure as a % of Share Price

6. Forest's share price was converted at US\$1.00 = CAD\$1.0389

7. Molopo's share price was converted at AUD\$1.00 = CAD\$0.9514

Figure. Stage 1 – Potential Value Proposition Source: Research Capital

Potential Value Proposition – Stage 2

Research Capital

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Company	Ticker	Net Acres ¹	Number of Wells ²	Unrisked Resource	Prospectivity	Success Factor	Risked Resource	NAV ³	F.D. Shares	NAV/ F.D. Share	Share Price ⁴	Utica Exposure⁵
				(bcf)	(%)	(%)	(bcf)	(\$mm)	(mm)	(\$)	(\$)	(%)
Altai	ATI-V	178,700	1,787	625	50%	70%	219	\$219	50.0	\$4.38	\$0.33	1347%
Epsilon	EPS-T	0	0	0	50%	70%	0	\$0	48.4	\$0.00	\$2.10	0%
Forest	FST-N	0	0	0	50%	70%	0	\$0	88.4	\$0.00	\$24.81	0%
Gastem	GMR-V	0	0	0	50%	70%	0	\$0	68.1	\$0.00	\$0.60	0%
Junex	JNX-V	240,175	2,402	841	50%	70%	294	\$294	63.2	\$4.66	\$1.46	319%
Molopo'	MPO-AU	122,475	1,225	429	50%	70%	150	\$150	182.8	\$0.82	\$1.21	68%
Petrolympic	PCQ-V	166,175	1,662	582	50%	70%	204	\$204	80.0	\$2.54	\$0.25	1018%
Questerre	QEC-T	69,025	690	242	50%	70%	85	\$85	214.6	\$0.39	\$2.47	16%
Talisman	TLM-T	387,325	3,873	1,356	50%	70%	474	\$474	1018.0	\$0.47	\$20.08	2%

Stage 2 Company Exposure

1. Stage 2 net acreage is based on estimates of land position between the Zero Edge Utica Line and the Yamaska Growth Fault.

2. 100-acre spacing

3. Valued at \$1.00/mcf in the ground.

2. As of Oct 16, 2009

5. Utica Exposure as a % of Share Price

6. Forest's share price was converted at US\$1.00 = CAD\$1.0389

7. Molopo's share price was converted at AUD\$1.00 = CAD\$0.9514

Figure. Stage 2 – Potential Value Proposition Source: Research Capital

Potential Value Proposition - Combined

	Risked Resource					NAV ¹					
Company	Ticker	Stage 1	Stage 2	Total	Stage 1	Stage 2	Total	F.D.	NAV/F.D.	Share	Total Utica
		(bcf)	(bcf)	(bcf)	(\$mm)	(\$mm)	(\$mm)	Shares (mm)	Share (\$)	Price ² (\$)	Exposure ³ (%)
Altai	ATI-V	0	219	219	\$0	\$219	\$219	50.0	\$4.38	\$0.33	1347%
Epsilon	EPS-T	55	0	55	\$55	\$0	\$55	48.4	\$1.13	\$2.10	54%
Forest ^⁴	FST-N	1,276	0	1,276	\$1,276	\$0	\$1,276	88.4	\$14.43	\$24.81	58%
Gastem	GMR-V	219	0	219	\$219	\$0	\$219	68.1	\$3.22	\$0.60	536%
Junex	JNX-V	403	294	697	\$403	\$294	\$697	63.2	\$11.04	\$1.46	756%
Molopo [°]	MPO-AU	0	150	150	\$0	\$150	\$150	182.8	\$0.82	\$1.21	68%
Petrolympic	PCQ-V	0	204	204	\$0	\$204	\$204	80.0	\$2.54	\$0.25	1018%
Questerre	QEC-T	1,084	85	1,168	\$1,084	\$85	\$1,168	214.6	\$5.44	\$2.47	220%
Talisman	TLM-T	2,293	474	2,768	\$2,293	\$474	\$2,768	1018.0	\$2.72	\$20.08	14%

Stage 1 and Stage 2 Combined Company Exposure

1. Stage 1 valued at \$1.00/mcf, Stage 2 valued at \$1.00/mcf in the ground, and subject to 50% prospectivity and risked at 70%.

2. As of Oct 16, 2009

3. Total Utica Exposure as a % of share price.

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4. Forest's share price was converted at US\$1.00 = CAD\$1.0389

5. Molopo's share price was converted at AUD\$1.00 = CAD\$0.9514

Figure. Combined Stage 1 & 2 – Potential Value Proposition Source: Research Capital



Summary

- Early Days in the First or Second Inning of a 9 inning game -Unknowns and Risk Remain
- Not all Acreage is Created Equally: Significant variability of results exists, even within concentrated areas.
- Early-mover Advantage
- Massive Resource Potential
- Statistical Play: In a statistical play type, there will be bad wells. However, good wells tend to be very good, offsetting the bad results. That being said, the greater the number of wells drilled, the more economic the play becomes.
- Learning Curve: The development progression takes time and we expect a similar development profile as the Barnett Shale or other shale plays in the United States.



When, not if it will work

- All the right ingredients for a successful shale play.
- Technology will unlock the Utica.
- Need cooperation among all stake holders.



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