The Outliers
January 2015
Finding Triple Digit IRRs in the Unconventional Montney Fairway

Unconventional Montney fairway spans an estimated 37,000 sq. km

Source: Modified after EIA (US Energy Information Administration)
Catching the Falling Knife

Source: Bloomberg, all prices in CAD
As of January 9, 2015
It All Begins with the Rock…Thick and Brittle

Source: BMO Capital Markets, WCSB Atlas fig 16.24, Sherwin GeoEDGES, GeoSCOUT
Over-pressured Reservoir Increases Deliverability, Storage and Capture

TOTAL VERTICAL DEPTH TO TOP OF MONTNEY

Source: BMO Capital Markets, GeoSCOUT, geoEDGES, BC OGC
Lands are tightly held across the fairway and have been for sometime

Source: GeoSCOUT, BMO Capital Markets
*The Halfway River First Nations Oil and Gas Consultation Agreement. Retrieved from www.bcogc.ca/node/8241/download
The Play is Mature Enough to Start Identifying Outliers

**UNCONVENTIONAL HORIZONTAL MONTNEY GAS**

- Production from the fairway is quickly approaching 4 Bcf/d
- Montney, in general, is known for its high heat content gas
- Due to the dilbit demand in Western Canada, condensate is the most desirable hydrocarbon stream

**UNCONVENTIONAL HORIZONTAL MONTNEY GAS PRODUCTION**

Source: GeoSCOUT, GeoEDGES, BMO Capital Markets
Where is the Money? – Following the C\textsubscript{5+} is Key

OUTLIER LIQUIDS FAIRWAY MAP

Source: GeoEDGES, GeoSCOUT, BMO Capital Markets, BC OGC

Note: Liquid Yields used in the type curve economics were assumed to be flat over the life of the curve. Rather than model a declining yield curve, C\textsubscript{5+} values are estimated at approximately 60% of the values shown on the Outlier Liquids Fairway map.
How Best to Model Condensate Yields – Declining Yields vs Constant Ratios

ELMWORTH TYPE CURVE WITH CONSTANT YIELD (CASE 1)

- IRR: 224% (69%***)
- Payout: 8 months (18 months***
- BT-NPV@10%: $21.1MM, $9.2MM***
- Initial Yield: 75 bbl/MMcf

ELMWORTH TYPE CURVE WITH DECLINING YIELD (CASE 2)

- IRR: 212% (63%***)
- Payout: 8 months (17 months***
- BT-NPV@10%: $17.4MM, $7.9MM***
- Initial Yield: 100 bbl/MMcf

ELMWORTH TYPE CURVE WITH FLAT THEN DECLINING YIELD (CASE 3)

- IRR: 224% (69%***
- Payout: 8 months (18 months***
- BT-NPV@10%: $19.5MM, $8.7MM***
- Initial Yield: Flat for 4 yrs then decline at 25%/yr

ELMWORTH TYPE CURVE WITH ALL YIELD CURVES

- IRR: 224% (69%***
- Payout: 8 months (18 months***
- BT-NPV@10%: $21.1MM, $9.2MM***
- Initial Yield: Flat for 4 yrs then decline at 25%/yr

NOTE: the yield profiles shown in cases 1 and 2 are identical since the yield is flat for 48 months in both cases. The IRRs are also identical, but the time to 50% of NPV is lower in case 3. This is because the NPV in case 3 is lower but the BT cash flow is the same as in case 1.

***Updated price deck $C4/GJ (AECO) and $US44.50/bbl (WTI) or $C50.00/bbl realized condensate pricing
The Outliers – Karr/Kakwa – IRR 350% (66%)***

- Active Operators:
  - Seven Generations
  - Paramount
  - NuVista
  - CNRL
  - Harvest
  - XTO
- Exposure:
  - Kicking Horse
    (Donnycreek + Contact)

Source: GeoSCOUT, BMO Capital Markets, BC OGC
**Flat pricing with $C4/GJ (AECO) and $US90/bbl (WTI)
***Updated price deck $C4/GJ (AECO) and $US44.50/bbl (WTI) or $C50.00/bbl realized condensate pricing
The Outliers – Elmworth/Wapiti – IRR >220% (69%)***

LOCATOR MAP

- Active Operators:
  - Encana
  - SINOPEC-Daylight
  - NuVista
  - Paramount
  - Shell
  - CNRL

- Exposure:
  - Chinook
  - Birchcliff

AREA PRODUCTION BY OPERATOR

TYPE WELL FORECAST

INPUT SENSITIVITY TO THE BASE VALUE IRR

Source: GeoSCOUT, BMO Capital Markets, BC OGC
**Flat pricing with $C4/GJ (AECO) and $US90/bbl (WTI)
***Updated price deck $C4/GJ (AECO) and $US44.50/bbl (WTI) or $C50.00/bbl realized condensate pricing
**The Outliers – Septimus – IRR >440% (95%)***

**LOCATOR MAP**
- Active Operators:
  - Canadian Natural
  - Crew

**AREA PRODUCTION BY OPERATOR**
- **Cdn Nat Rsrs Ltd**
- **Crew Enrg Inc**
- **Well Count**

**TYPE WELL FORECAST**
- **IP30**: 3.9 MMcf/d
- **C2+ Yield**: 100 bbl/MMcf

**INPUT SENSITIVITY TO THE BASE VALUE IRR**
- **Base Value**: BT-NPV@10% = $18.1MM, IRR > 444%
- Change in IRR from base value (%)

**SOURCE:** GeoSCOUT, BMO Capital Markets, BC OGC

**Notes:**
- Flat pricing with $C4/GJ (AECO) and $US90/bbl (WTI)
- Updated price deck $C4/GJ (AECO) and $US44.50/bbl (WTI) or $C50.00/bbl realized condensate pricing
The Outliers – Altares – Approaching 100% IRR (34%)***

LOCATOR MAP

- Active Operators:
  - Canbriam
  - Progress
  - Suncor

AREA PRODUCTION BY OPERATOR

TYPE WELL FORECAST

- BT-NPV@10% $13.6MM
- IRR 98%
- IRR 34%***
- Payout 1.1 yrs
- Drill Credit $2.6MM

LOCATOR MAP

- Altaires
- Normal Pressure Gradient 10.0 kPa/m (0.43 psi/ft)
- BC Drill Credit Line

AREA PRODUCTION BY OPERATOR

- Canbriam Enrg Inc
- Progress Enrg Cda Ltd
- Suncor Enrg Inc

INPUT SENSITIVITY TO THE BASE VALUE IRR

Source: GeoSCOUT, BMO Capital Markets, BC OGC

**Flat pricing with $C4/GJ (AECO) and $US90/bbl (WTI)

***Updated price deck $C4/GJ (AECO) and $US44.50/bbl (WTI) or $C50.00/bbl realized condensate pricing
The New World Order - $50 Condensate?????

Liquids-Rich Montney Can Withstand Tremendous Pressure on Pricing

<table>
<thead>
<tr>
<th>Sweet Spot Areas</th>
<th>C5+ (MMcf/d)</th>
<th>EUR (bbl/MMcf)</th>
<th>% Liquids (%)</th>
<th>Capital ($MM)</th>
<th>Drill Credit ($MM)</th>
<th>BT-NPV@10% ($MM)</th>
<th>IRR (%)</th>
<th>PI@10% (x)</th>
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Updated price deck $C4/GJ (AECO) and $US44.50/bbl (WTI) or $C50.00/bbl realized condensate pricing
Close But Not There Yet – Nig/Jedney/Blueberry/Inga – IRR 29-91% (8-33%)***

LOCATOR MAP
- Jedney
- Nig
- Blueberry/Inga

Active Operators:
- Artek
- Black Swan
- Bonavista
- Carmel Bay
- CNRL
- ConocoPhillips
- Painted Pony
- Paramount
- Progress
- Shell
- Storm
- UGR

ECONOMIC SUMMARY - SUB 100% AREAS

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<th>IP&lt;sub&gt;30&lt;/sub&gt;</th>
<th>C&lt;sub&gt;S+&lt;/sub&gt;</th>
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<th>Capital</th>
<th>Drill Credit</th>
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<th>PI@10%</th>
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<tr>
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<td>(bbl/MMcf)</td>
<td>(Bcfe)</td>
<td>(%)</td>
<td>($MM)</td>
<td>($MM)</td>
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Source: GeoSCOUT, BMO Capital Markets, Corporate Presentations
***Updated price deck $C4/GJ (AECO) and $US44.50/bbl (WTI) or $C50.00/bbl realized condensate pricing
Emerging Areas – Sunrise and Attachie – The First Indicators are There

LOCATOR MAP

- **Attachie Operators:**
  - ARC
  - Crew

- **Sunrise Operators:**
  - ARC
  - Tourmaline

**ECONOMIC SUMMARY – EMERGING AREAS**

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<th>IP_{30} (MMcf/d)</th>
<th>C_s (bbl/MMcf)</th>
<th>EUR (Bcfe)</th>
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<th>Capital ($MM)</th>
<th>Drill Credit ($MM)</th>
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Increasing IP to 4.0 MMcf/d provides a 41% IRR

Type Well Forecast

Source: GeoSCOUT, BMO Capital Markets, Corporate Presentations

***Updated price deck $C4/GJ (AECO) and $US44.50/bbl (WTI) or $C50.00/bbl realized condensate pricing***
What to Watch For

OUTLIER LIQUIDS FAIRWAY MAP

OUTLIER AREAS

- Focus on continued well performance in the ranges observed to date
- For the outliers, control over infrastructure solutions will be key to success
- Continued improvements in capital efficiencies – will we see declining cost structure?

EMERGING AREAS

- Here the focus will be on consistent C$_5^+$ results from appraisal wells
- Continued improvements in deliverability as completion practices are refined
- Lay the groundwork for thoughtful development of infrastructure – particularly liquids

SUB 100% IRR AREAS

- Movement of the drill credit line east will materially and positively impact the economics at Nig and Jedney
- Changes in well completion techniques that could improve the co-production of C$_5^+$ (slow back, larger fracs etc.) and IPs

Source: GeoEDGES, GeoSCOUT, BMO Capital Markets, BC OGC
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