

# Calima Energy Limited (ASX:CE1)

October 2017

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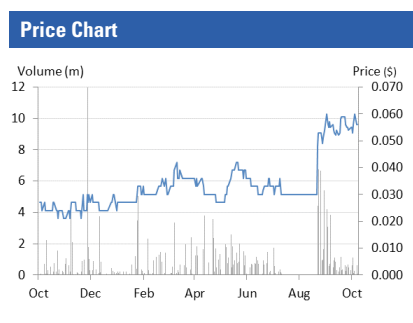
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**Note:** This report is based on information provided by the company as at October 2017

Investment Profile	
Share Price - 19 October 2017	A\$0.058
6 Month Price Target	A\$0.15
Issued Capital:	
Ordinary Shares	438.6m
Escrow Shares	51.8m
Escrow Options (Unlisted)	30.0m
Performance/Management Rights and Shares	86.3m
Fully Diluted	606.7m
Market Capitalisation	\$28.5m
12 month L/H (adjusted for consolidation)	\$0.021/\$0.059
Cash and Liquid Investments	\$7.55 million

Board and Management	
Mr Glen Whiddon: Executive Chairman	
Dr Alan Stein: Managing Director	
Mr Jonathan Taylor: Technical Director	
Mr Neil Hackett: Non-Executive Director	

Major Shareholders	
HSBC Custody Nominees	7.58%
Pacific World Energy Ltd	6.83%
Mr Alan Stein	6.60%
Top 20	54.79%
Board and Management	20.0%



Senior Analyst – Mark Gordon

The investment opinion in this report is current as at the date of publication. Investors and advisers should be aware that over time the circumstances of the issuer and/or product may change which may affect our investment opinion.

## GOING THE FULL MONTNEY

Calima Energy ("Calima" or "the Company") is farming into highly prospective acreage (the "Calima Lands") in the world class unconventional liquids-rich Montney Formation of eastern British Columbia, Canada. The Farm-in, which includes the drilling of three horizontal wells, has an ultimate entry cost of C\$25 million to earn 55% of ~70,000 acres, an average entry price of C\$650/acre. Over recent years the liquids-rich areas of the Montney have seen a boom in activity, driven both by falling gas prices (making the dry gas areas less attractive) and strong demand and prices for condensate, largely for use as a diluent in the Alberta oil sands operations. Transaction prices over the last few years for undeveloped land have averaged ~C\$2,000/acre, however have reached up to C\$5,500/acre in recent BC Land Sales. The Calima Lands are along trend from currently producing acreage, with work to date highlighting the potential of the Company's acreage which has a very low entry price, and hence presents a highly leveraged play.

## KEY POINTS

**World class liquids play:** Despite only having been developed over recent years, the over-pressured liquids rich window of the Montney has been transformed into a world-class unconventional liquids producer, and is now a key supplier of high value condensate and other natural gas liquids ("NGLs") to the North American market - current production is 6.3bcfe/d (including 247 mbbbl/d of condensate and other liquids)

**Thick, stacked reservoirs:** With a thickness of 200m to 300m, the Montney provides an excellent opportunity to developed multi-layer completions from single surface sites - this leads to relatively low development costs, with current break even costs amongst the lowest in North America; this is reinforced by the primary lithology being a siltstone rather than a true shale, resulting in higher porosity and permeability, better fracture stimulation properties and hence enhanced recoveries when compared to other shale plays.

**Strong investment interest:** The quality of the liquids-rich Montney has resulted in strong investment interest, with the 2017 investment of C\$5.2 billion forecast to rise to C\$7.5 billion in 2022; this has also resulted in the share price of companies operating in the Montney strongly outperforming those of companies focussed on the other North American unconventional basins, including the Eagle Ford and Permian amongst others.

**Leverage off significant IP developed to date:** The amount of activity in the Montney has resulted in spectacular advances in well productivity with the "cracking of the code" in most areas - Calima is in an ideal position to benefit from this, thus de-risking planned upcoming drilling activities.

**Forecast strong condensate demand:** Increasing oil sands production is driving demand for condensate as a diluent, with prices for Canadian condensate near that of WTI crude; Canadian domestic production is well below demand, with demand also expected to grow, and with the shortfall being sourced from imported liquids, largely from the US.

**Significant value upside:** The arbitrage between the Calima acquisition price and that of other recent transactions provides significant value upside in Calima, and the potential for strong, relatively short term returns to shareholders.

**Strong management and technical team:** The Company has management and technical personnel with extensive experience in the oil and gas sector, and a proven history of technical success and delivering value to shareholders; in addition key personnel hold ~20% of the Company, thus aligning their interests with those of other shareholders.

**Price target:** We have a base case **6-month price target of A\$0.15/share** for Calima, based on a land value of C\$2,500/acre, and a fully diluted structure including the current fully diluted share base plus 200 million shares issued through upcoming capital raisings of a minimum of A\$20 million at \$0.10/share to fund the farm-in drilling. The base case valuation includes A\$0.025/share cash from the assumed raisings. **The 6-month price target pre-dates the anticipated drilling activity which could have a significant impact upon the valuation.**

## SWOT ANALYSIS

### Strengths

- ◆ **Highly prospective acreage:** Although largely undeveloped, given the results of offsetting operations, we consider the Calima Lands to be highly prospective for liquids-rich hydrocarbons.
- ◆ **Thick reservoirs:** The thickness of Montney will allow the drilling of several wells off one pad, thus reducing drilling and operating costs.
- ◆ **Understood drilling techniques:** The significant work over the Montney in recent years has led to a deep understanding of the drilling completions required - this should significantly de-risk Calima's proposed drilling.
- ◆ **Well regarded jurisdiction:** British Columbia is a well regarded and stable oil and gas producing jurisdiction, and hence attractive to investors.
- ◆ **Close to infrastructure:** The Montney is well served by hydrocarbon and transport infrastructure, and with skilled services readily available.
- ◆ **Undervalued:** Given the metrics of the Farm-in, Calima's acreage is significantly undervalued when compared with that of peers.
- ◆ **Experienced people with skin in the game:** Company personnel and consultants have significant experience and success in the oil and gas game, and also have significant holdings in Calima - this success has included listing and growing both Ophir Energy plc and Fusion Oil and Gas plc.

### Weaknesses

- ◆ **Funding:** The Company will need to go to the market to raise the money to fund the drilling stages of the Farm-in - the ability to do this will largely depend upon the markets and investor sentiment.

### Opportunities

- ◆ **Drilling success:** This is the key opportunity for Calima, with what will be for all intents and purposes the first drilling on the Calima Lands.
- ◆ **Acreage expansion:** The Company is actively expanding its Montney acreage.
- ◆ **Other acquisitions and farm-ins:** Calima will be looking at other opportunities, either within the Montney or in other oil and gas plays globally where it has a competitive advantage.
- ◆ **Exit strategy:** This is part of the Company's strategy, with it looking to add significant value to allow an exit that will give significant returns to shareholders..

### Threats

- ◆ **Non- or under-performance of wells:** This is the key risk facing Calima - although work to date has indicated that the Calima Lands should perform well, this is not a given and can be affected by any number of factors - one key at Calima will be the liquids (particularly condensate) content, as well as the interpretation that the reservoir is towards the lower end of over pressuring.
- ◆ **Markets and hydrocarbon prices:** A key perennial threat facing juniors are falls in the stock and hydrocarbon markets, particularly when it comes to having to raise funds in a bad market – this will also impact with investors selling down the more risky juniors before other less risky investments.

## OVERVIEW

### STRATEGY AND PROJECT OVERVIEW

- ◆ Calima's, (formerly Azonto Petroleum Ltd) focus is on undeveloped unconventional gas/liquids acreage in the highly productive Montney Formation of the Western Canada Sedimentary Basin ("WCSB") of British Columbia, Western Canada.
- ◆ Calima's has a strategy to grow the Montney land position, define Resources which will then be tested by drilling to allow for Reserves to be declared - after this the Company will look at an exit strategy to return value to shareholders.
- ◆ The Company will also consider other opportunities as and when they arise.
- ◆ The Company was re-instated to the ASX on August 31, 2017, following re-compliance with Chapters 1 and 2 of the ASX Listing Rules.
- ◆ This followed on from the Company, as announced to the market on May 1, 2017, entering into a Farm-in agreement on the Calima Lands, acquiring 100% of Calima Energy Ltd from Havoc Partners LLP ("Havoc"), a 1 for 3 share consolidation and raising A\$2.25 million, collectively termed "the Agreement".
- ◆ The Montney acreage was previously held 60% by TMX-Montney (a public unlisted company demerged in 2015 from Tamaska Oil and Gas, ASX: TMK) and 40% by TSV-Montney (a public unlisted company demerged in 2015 from Transerv Energy Limited; ASX: TSV), collectively termed the Montney JV.
- ◆ The Agreement also saw Dr Alan Stein and Mr Jonathan Taylor, both partners of Havoc, join the Calima Board, with the other members of the Havoc team also joining the Company.
- ◆ Activities are targeting the higher value, over-pressured unconventional liquid rich gas areas of the Montney Formation – these provide significant value add through the presence of high value natural gas liquids ("NGLs"), both occurring as wellhead condensate and as extracted through processing in a gas plant.
- ◆ Calima also has a 50% holding in four offshore Production Sharing Contracts ("PSCs") awarded by the Sahawari Arab Democratic Republic ("SADR"), more commonly known as Western Sahara.
- ◆ These rights are held through Assurance Agreements executed by the SADR Government, and will convert automatically to PSCs once the SADR is recognised by the UN – currently a significant part of the SADR, including offshore areas, is occupied by Morocco.
- ◆ The SADR properties will not be discussed further, neither will a 10% passive holding in Bahari Holding Company Ltd ("Bahari"), which is the Operator of petroleum exploration agreements covering Blocks 35, 36 and 37 in the offshore territory of the Union of Comoros in the Indian Ocean

### FINANCIAL POSITION

- ◆ As of June 30, 2017, the Company had cash of A\$4.904 million; subsequent additions include ~A\$400,000 through the acquisition of Calima and A\$2.25 million (before costs) raised through a public offer to give current cash reserves of ~A\$7.5 million.
- ◆ The capital raising was done at a price of A\$0.045 (post 1 for 3 consolidation); the \$2.25 million raised was the minimum required for ASX re-compliance.

### CALIMA LANDS – CALIMA EARNING 55%

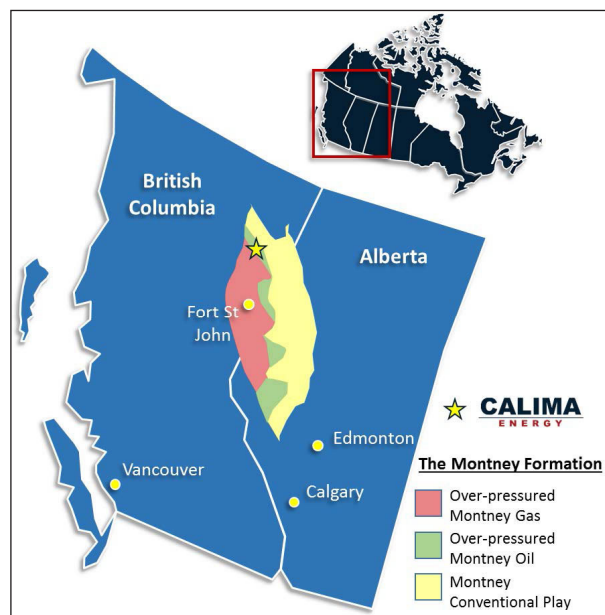
#### Location and Tenure

- ◆ The Calima Lands are located in north-east British Columbia (Figure 1) approximately 150km NNW as the crow flies from Fort St John; the areas is readily accessible via oil and gas roads from Highway 97.
- ◆ Calima is currently earning into +63,800 gross acres of Drilling Licences in the northern Montney Formation (Figure 2); this has grown 27% from ~50,000 gross acres at the time of announcing the farm-in (May 1, 2017), with the additional 13,714 acres acquired through the competitive Government tender process.
- ◆ The acreage is divided amongst two blocks; the larger Caribou rights and the smaller Pocketknife block to the northwest (Figure 2).



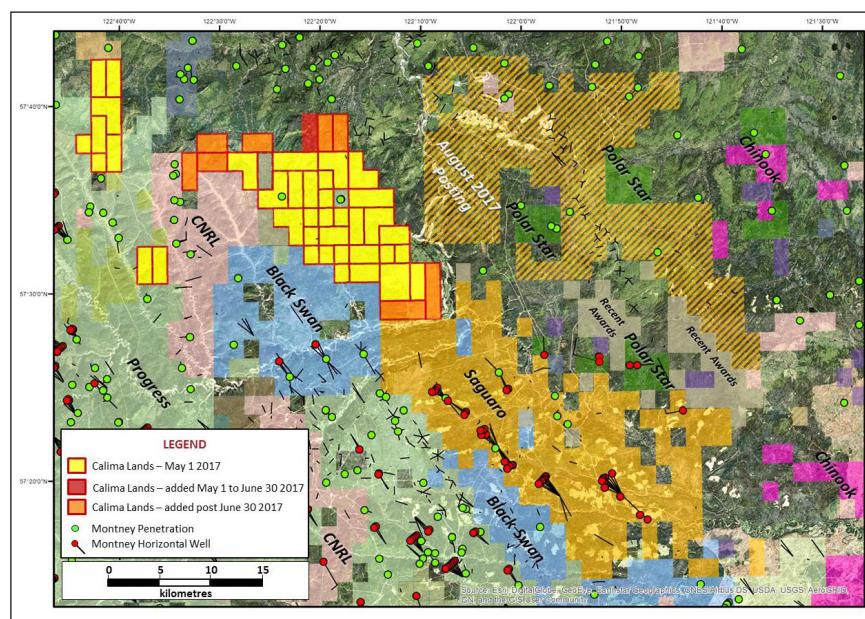
- ◆ The sections are located on the eastern edge of the interpreted over-pressured liquids-rich gas window.
- ◆ All rights are valid for an initial term of four years, and are currently in good standing - these can be extended generally for a single one year period or converted to production leases upon meeting certain criteria.
- ◆ The oldest Drilling Licence was granted on November 7, 2014, and thus is valid until November 7, 2018, with the potential to extend until November 7, 2019.
- ◆ The target is to build the gross position to ~70,000 gross acres by the end of 2017, which would form a critical mass to justify building pipeline and gas treatment infrastructure should the acreage prove to be productive – larger land packages also attract a per acre premium in any transaction with all other factors being equal.

**Figure 1: Montney location map**



Source: Calima

**Figure 2: Caribou acreage**



Source: Calima

- ◆ The original acreage was acquired by TMX/TSV at an average land cost of C\$130/acre – holdings as of the time of the agreement (which totalled 55,000 acres) included two smaller blocks further south at Inga and Fort St John, however given the sizes and relationship to surrounding holdings these have now either been relinquished or sold.

- ◆ As of the time of the Agreement the Montney JV had spent some C\$10.4 million, largely on land acquisition.
- ◆ Neighbouring properties (Figure 2) are held largely by Black Swan Energy ("Black Swan") and Saguaro Resources Limited ("Saguaro"), both private equity backed unlisted companies that have had considerable success on their respective acreage and are currently producing gas and liquids.

### Earn-In and Acquisition Agreements

- ◆ The Agreement and ASX re-compliance included a number of key facets:
  - The Farm-In agreement to the Montney JV (ongoing),
  - The acquisition of Calima Energy Ltd (completed),
  - The appointment of Havoc personnel to the board of Calima and engagement of other Havoc personnel (completed),
  - A capital raising to raise between A\$2.25 million and A\$4.5 million (completed, with A\$2.25 million raised),
  - A 1 for 3 share consolidation (completed), and,
  - Change of name of Azonto to Calima Energy Limited (completed).
- ◆ The Farm-in agreement includes three stages whereby Calima shall operate and sole-fund activities to earn up to a 55% working interest in the Montney JV, with the existing JV partners diluting proportionally; the three stages include:
  - Stage 1 – earn 20% through the expenditure of C\$5 million by August 1, 2018 – planned activities include licencing and re-interpretation of 3D seismic data relevant to the Project, drill planning and the acquisition of additional acreage,
  - Stage 2 – earn an additional 17.5% (total interest 37.5%) through the expenditure of a further C\$7 million (total expenditure C\$12 million) by February 28, 2019 – planned activities include the drilling of one well with a 2,000m horizontal ("Hz") lateral, and,
  - Stage 3 – earn an additional 17.5% (total interest 55%) through the expenditure of a further C\$13 million (total expenditure C\$25 million) by February 28, 2020 – planned activities include the drilling of an additional two 2,000m Hz wells.
- ◆ Should Calima elect not to continue with Stages 2 and 3 of the Farm-in, it shall retain a 20% interest with all parties funding activities pro-rata.
- ◆ The Company has sufficient cash to fund Stage 1 (and has thus far expended C\$1.5 million, largely in acreage acquisitions), however will need to go to the market for to fund the Stage 2 and 3 drilling programmes.
- ◆ Prior to the Agreement, Calima was a 100% held subsidiary of Havoc, and held the following assets (subsequently transferred to the listed entity):
  - The 50% interest in the SADR PSCs,
  - A passive minority interest of approximately 10% in Bahari, which holds offshore licences near the Comnoros Islands,
  - A passive shareholding of ~11% in TMK-Montney, giving it a 4.5% effective interest in the Montney JV pre-Farm-in, and,
  - Approximately A\$400,000 in cash.
- ◆ The consideration for the acquisition of Calima included (post consolidation):
  - 28,508,751 fully paid ordinary shares,
  - 1,461,988 Class A Performance Shares (related to activities in the SADR),
  - 3,947,360 Class B Performance Shares (related to the Montney JV, and,
  - 14,619,878 Class C Performance Shares (related to Bahari).
- ◆ Convertible notes with a face value of \$400,015 were issued to certain Havoc Members – these have been satisfied in full by the issue of a further 20,000,750 shares at a deemed issue price of A\$0.02/share post consolidation.
- ◆ Havoc Members were also issued with 19,450,000 Performance Rights and 20,000,000 options (post consolidation basis) – full details of these and the Performance Shares are set out in the release of May 1, 2017.



## THE MONTNEY FORMATION

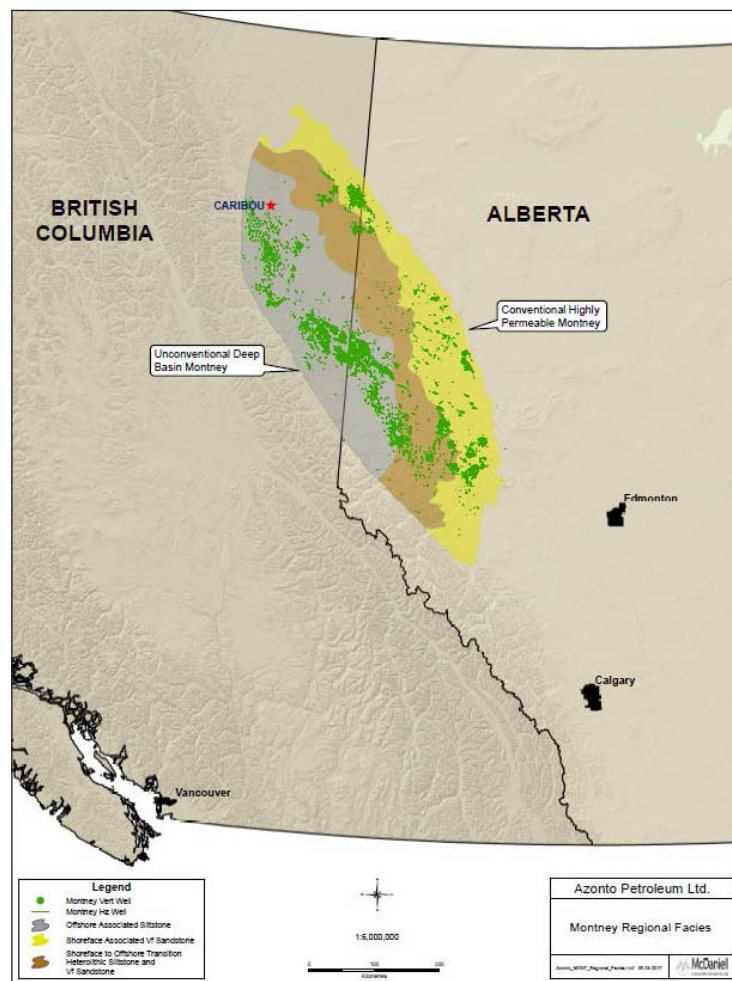
### Introduction

- ◆ The Montney Formation (Play) is the most active hydrocarbon exploration play in Canada, with an estimated C\$5.2 billion in investment in 2017, forecast to rise to C\$7.5 billion in 2022.
- ◆ The Montney is one of a number of plays within the WCSB, with others including Duvernay and Viking amongst others.
- ◆ Current production is 6.3bcfe/d (including 247,000 bbl/d condensate and other liquids), and is predicted to more than double by 2022.
- ◆ Although the Montney has seen oil and gas exploration since the 1960's, it was not until 2005, with developments in horizontal drilling and hydraulic fracturing, that saw development of the unconventional areas commence in any meaningful way.
- ◆ Development, largely since 2010, has included infrastructure, including pipelines and gas treatment plants.
- ◆ More recent work, given relatively low gas prices since 2013/2014, has largely concentrated on the liquids rich areas, with the Montney being developed into a world-class liquids/condensate play.
- ◆ This has partly been driven by the demand for condensate to be used as diluent required for transporting oil sands bitumen/oil as "dilbit" – dilbit is commonly comprised of 1/3 diluent to 2/3 bitumen.

### Geology and Reserves

- ◆ The Montney Formation, which covers an area of some 130,000km<sup>2</sup> within the broader WCSB, is a Lower Triassic package of largely shelf-facies siltstones (with some sandstones) in the west, grading to more shallow water sediments, including porous sandstones and shell beds in the east (Figure 3).

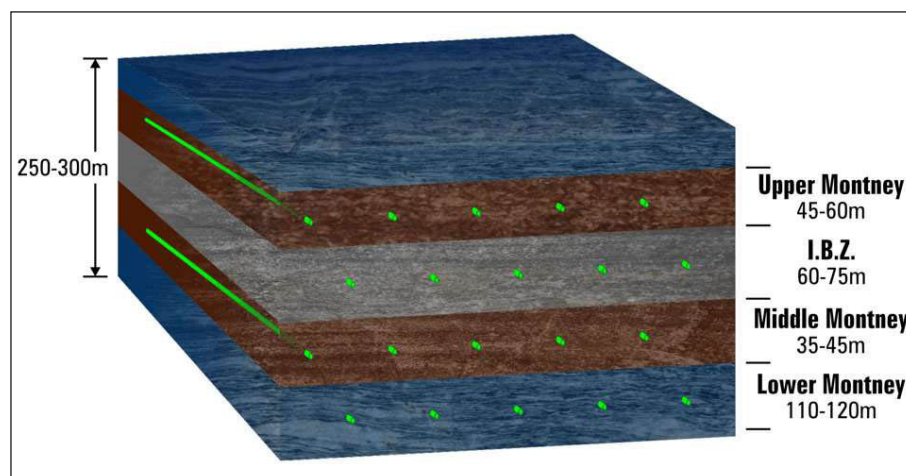
**Figure 3: Montney Formation regional facies - wells shown as green dots**



Source: Calima

- ◆ The formation is generally between 100m and 300m thick, although thins to zero at its eastern and north-eastern edges, and thickens to over 300m on the western side where the basin has undergone deformation in the Rocky Mountains.
- ◆ The thickness is generally greater than other unconventional plays, allowing for multi-layer Hz wells from one surface location (Figure 4) – the number of wells (locations) will vary according to the site; Calima expects the possibility of up to 16 wells for each productive horizon per pad, with two or three productive horizons at each pad.
- ◆ Given the range of depositional environments, the Montney is relatively heterogenous across the basin, however three stacked main sub-units have been identified, being the Upper, Middle and Lower Montney (Figure 4), with the Upper and Middle being most productive (note that Kelt are also targeting a zone between the Upper and Middle Montney).

**Figure 4: Multi-layer development diagrammatic**



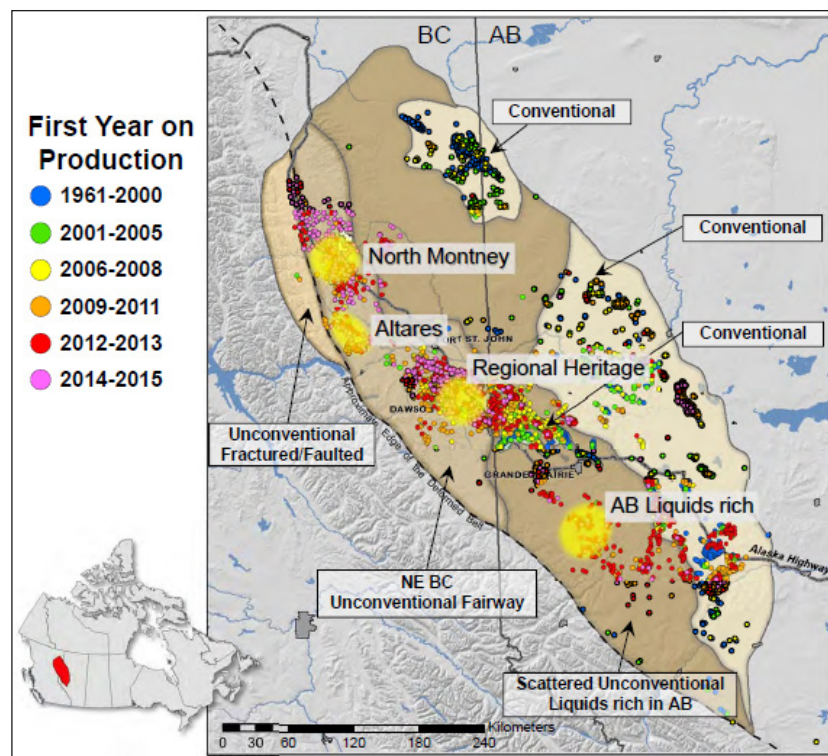
Source: Kelt Exploration presentation

- ◆ In addition to thickness, depth and hence pressure increase to the west, with this also seeing an increase in gas contents and a decrease in NGLs, oil content and porosity.
- ◆ Reservoir characteristics also change (Figures 1 and 3), with the eastern areas being suitable for conventional extraction, and the western areas being over-pressured, unconventional plays.
- ◆ However, as contrasting to a number of other North American unconventional areas (including the Eagle Ford and Utica Shale), the dominance of siltstones rather than shales in the Montney Formation means that hydrocarbon extraction is more productive – the Montney is not a true shale play.
- ◆ Like other unconventional plays, generated hydrocarbons are largely in-situ, and thus the system becomes “inverted” from the conventional sense, in that water sits above the oil window, which in turn sits above progressively dryer gas as the system gets deeper.
- ◆ A key fairway (which Calima is targeting) is a north to northwest trending, over-pressured liquids rich gas sub-play between the conventional oil and unconventional dry gas zones; this is attractive because of the relatively high prices for condensate and NGLs, and which is the zone that Saguaro and Black Swan are also working on – this generally occurs along the middle to the eastern margin of the over-pressured Montney gas window (Figure 1).
- ◆ Calima’s Caribou area is also interpreted to have similar characteristics to acreage immediately to the south-east of Fort St. John (including the Heritage Liquids, Dawsons Creek and Pouce Coupe Sub-Plays) with operators including Crew Energy Inc (“Crew”, TSX.CR, Septimus/Septimus West acreage) and Encana Corporation (“Encana”, TSX. ECA, Tower, Dawson South acreage) amongst others – this region is the most highly developed of the Montney gas/liquids areas.
- ◆ It is estimated that remaining recoverable reserves in the Montney include 449 Tcf of gas, 14.4 bn bbls of condensate and 1.1 bn bbls of oil (Source: The Ultimate Potential for Unconventional Petroleum from the Montney Formation of British Columbia and Alberta, National Energy Board, 2013), with Wood Mackenzie estimating that much of the remaining value is within the liquids-rich gas areas.

## Exploration and Development History

- ◆ Although the Montney Formation has seen oil and gas exploration since the 1960's, earlier work concentrated on the conventional sandstone and dolostone reservoirs in the east – these conventional reservoirs are encased in siltstone which comprises a far greater volume of rock, and which also hosts oil and gas.
- ◆ The Montney siltstones remained undeveloped until 2005, with development driven by improvements in horizontal drilling and hydraulic fracturing making the unconventional plays economic to develop.
- ◆ Since that time the Montney has been the site of intense activity, with more recent work including the drilling of over 6,700 wells, with most being horizontal.
- ◆ Since 2013/2014 activities have been focussed on finding liquid rich “sweet spots” – this follows on from some exceptional results in liquids rich areas (including Heritage and Pouce Coupe, located near the Alberta border to the south and southeast of Fort St John), and the demand, as mentioned earlier, for liquids for use in dilbit.
- ◆ This has seen progressively broader areas being drilled and interpreted liquids-rich areas being expanded, including into the North Montney (Figure 5) – this figure highlights the amount of more recent activity - note that the area labelled “Regional Heritage” includes Pouce Coupe, Heritage and Groundbirch.
- ◆ Activity has also seen significant dry gas drilling, particularly by Progress Energy (a wholly owned subsidiary of Petronas) in North Montney – the strategy behind this was to feed the proposed Pacific Northwest LNG Project, which, due to market conditions and opposition from various parties, has been put on hold (along with a number of other planned LNG projects).

Figure 5: Montney play evolution

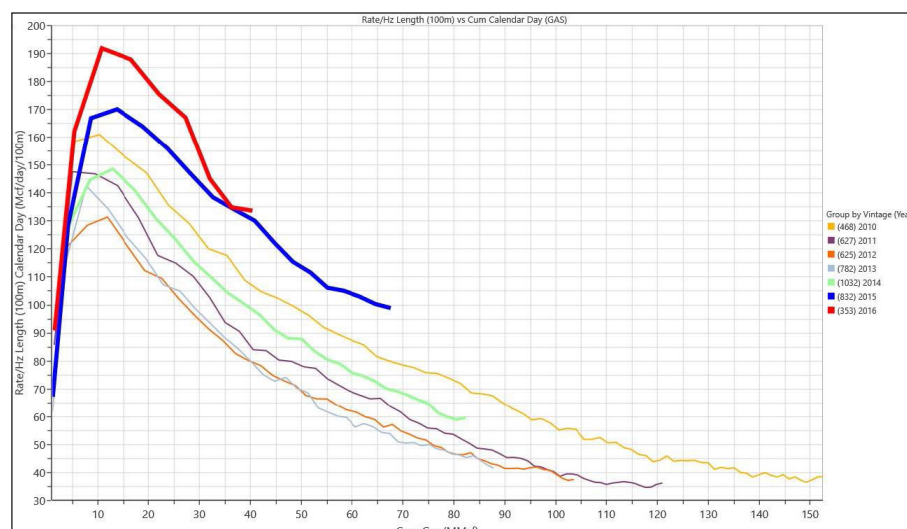


Source: [www.unconventionalgas.com](http://www.unconventionalgas.com)

- ◆ A key outcome of the intensive development has been the rapid improvement in completion efficiency and costs, leading to improved recoveries and well economics; key completion changes since 2010 include:
  - Increase in average lateral length from ~1,600m to 1,800m,
  - Decrease in fracture stimulation spacing from 250m to 60m,
  - Increase in proppant concentration from 0.7t/m to 1.1t/m. and,
  - Decrease in completion cost from ~C\$3,200 to C\$1,000 per tonne of proppant.
- ◆ Average well drilling and completion costs are in the order of C\$5 million including tie-in.
- ◆ The improvement in well performance is highlighted in Figure 6.



Figure 6: Montney daily gas well performance by year drilled – normalised by lateral length

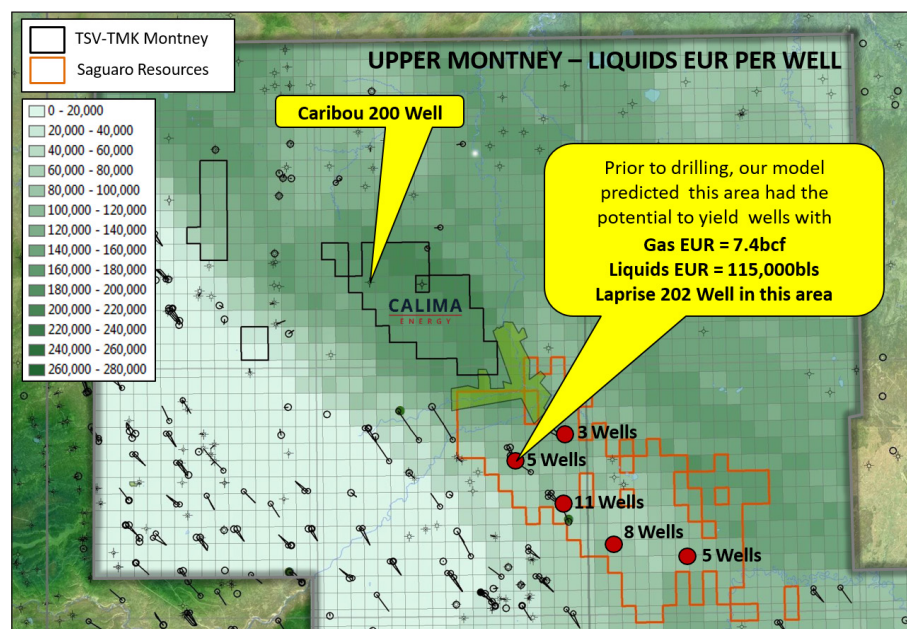


Source: Calima

### Work at Caribou

- ◆ The Caribou area was highlighted in a targeting exercise originally completed by the Montney JV (at that stage including Temaska and Transerv prior to the de-merger of the entities that now comprise the JV).
- ◆ This included “Common Risk Sector Mapping”, which involves integrating and studying various factors (available from the 3,500+ horizontal wells drilled into the Montney at the time), including liquids/gas ratios, pressure, resistivity, porosity and above ground conditions to highlight areas considered prospective for the liquids rich gas being sought.
- ◆ This work highlighted the various areas gradually acquired by the Montney JV, with outcomes including modelled liquids expected ultimate recoveries (“EURs”) for Caribou shown in Figure 7 – this also shows Saguaro’s offsetting Laprise acreage with wells drilled to date – the 32 shown in Figure 7 are all productive Hz wells.

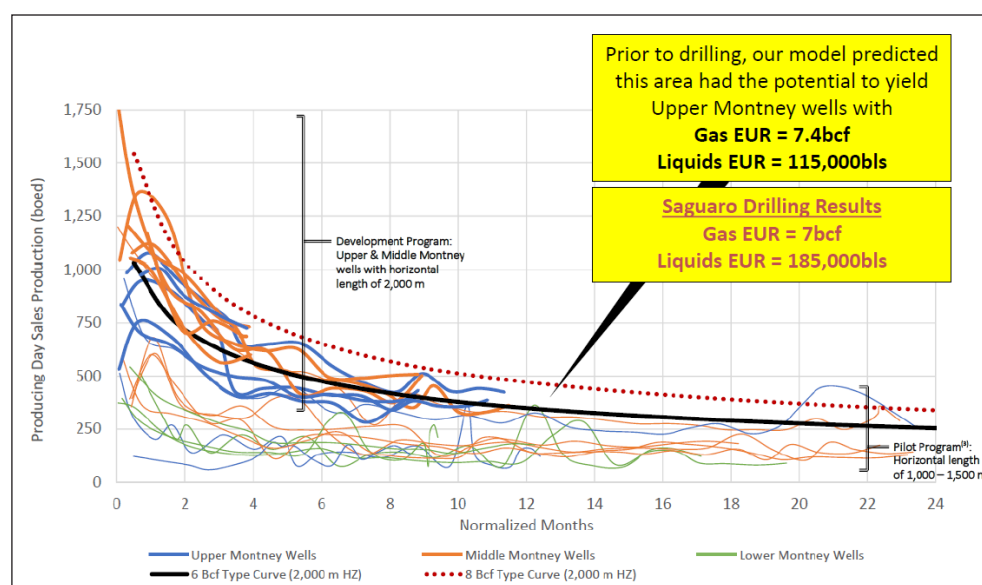
Figure 7: Upper Montney modelled liquids EUR/well



Source: Calima

- ◆ As shown in Figures 7 and 8, the results of drilling by Saguaro have supported the results of the Montney JV modelling, and also highlights the potential for Caribou to be richer in liquids than Laprise.

Figure 8: Laprise Upper and Middle Montney well performance



Source: Calima

- ◆ There are now over 60 well penetrations into the Montney within 35km of Caribou, however only one penetration within the Calima Lands.
- ◆ Data from this well (Calima 200) compares very favourably with what has been recently developed and is currently being developed by Saguaro; this includes Laprise Well 202 (Figure 5) – key parameters are provided in Table 1, with this work being incorporated in the 2017 McDaniel report.

Table 1: Comparison – Caribou Well 200 and Laprise Well 202

Table 1: Comparison – Caribou Well 200 and Laprise Well 202								
Well ID	Top (m)	Pay (m)	Porosity (%)	Water Saturation (%)	Gradient (kPa/m)	Temp (C)	Pressure (kPa)	Illustrative Gas in Place (Bcf/sq mile)
<b>Upper Montney</b>								
Caribou 200	1332.6	55.5	5.2	15	11.5	42	15,209	40
Laprise 202	1622.7	26.4	4.2	17	13	52	21,096	19.2
<b>Middle Montney</b>								
Caribou 200	1391.2	63.3	4.5	15	11.5	45	15,998	40.9
Laprise 202	1680.9	37.1	4.1	16	13	54	21,851	27.1
<b>Lower Montney</b>								
Caribou 200	1496.5	21.2	4.3	26	11.5	48	17,209	12
Laprise 202	1788.4	16.1	3.5	23	13	57	23,249	9.5

Source: Calima

- ◆ Key differences can be explained by the different depths, with the pay intervals in the Saguaro well being deeper, thus explaining the higher pressure, temperature and lower porosity.
- ◆ The net pays in the Calima well are thicker, however this should not be considered indicative of the holdings as a whole – key parameters will be variable over the respective acreages.
- ◆ A key difference may turn out to be the interpreted lower pressure gradient at Caribou (however this won't be known until the drilling is completed), which may adversely affect recoveries, however this will be at least partly offset by the shallower depth and hence cheaper drilling costs.

### Offset Activity

- ◆ Key offset players include Saguaro and Black Swan, with Saguaro's Laprise acreage (Figure 7) being considered the closest analogue to Calima's Caribou acreage, as highlighted by the well comparison discussed earlier.
- ◆ Also as mentioned earlier, we also consider that the highly developed acreage held by Crew and Encana amongst others in the liquids-rich Heritage and adjacent areas southeast of Fort St. John may potentially be considered as an analogy.

- ◆ Saguaro, which has an average land acquisition cost of ~C\$1,000/acre for its 160 Sections (110,000 acres) has invested over C\$400 million in the drilling of 36 wells and building facilities including a 100mmcf wellhead treatment facility – Saguaro is fully funded to drill 28 additional wells through 2017.
- ◆ This has been sourced from access to C\$445 million in equity lines, and with current access to debt facilities totalling C\$155 million, including a C\$105 million revolving line of credit.
- ◆ Current production is 12,000 boe/d, with a liquid yield of 55bbls/mmcf, of which 71% is the higher valued condensate (liquids provide 47% of revenue, including 40% from condensate) – plans are to exit 2017 with a production of 16,000 boe/d.
- ◆ Q1, 2017 operating netback was ~C\$17/boe, from revenues of ~C\$28/boe.
- ◆ The wells exhibit strong economics, with estimated half cycle IRRs are 40-83% per well, with EURs estimated at 6.3 to 8.3 bcf (1.2 to 1.6 mmboe) per well – these are based on 2,000m laterals.
- ◆ Saguaro's Reserves position at the end of 2016 is shown in Table 2 below.

**Table 2: Saguaro net Reserve position, December 2016**

Table 2: Saguaro net Reserve position, December 2016				
Net Reserves	Total, mboe	Pre-tax NPV <sub>10</sub> C\$'000	Locations	NPV/Location C\$'000
Proved Developed Producing (PDP)	15,822	\$190,592	32	\$5,956
<b>Total Proved (1P)</b>	83,535	\$604,005	134	\$4,508
<b>Total Proved + Probable (2P)</b>	270,286	\$1,845,605	330	\$5,593

Source: Calima

- ◆ Economics published by Black Swan for their Montney wells show similar characteristics and economics as those for Saguaro, with a half-cycle before tax IIR of 75% for a 9 Bcf EUR well at C\$2.50/GJ AECO gas prices, a WTI price of US\$50/bbl and liquids yields of 40 bbl/MMcf.
- ◆ This highlights the potential value in the acreage being farmed into by Calima, which, by our calculations, will have an average cost of acquisition (including drilling of the three appraisal wells) of C\$650/acre – this assumes an ultimate land position of 70,000 acres gross (38,500 acres net to Calima at a 55% working interest) and the full earn-in expenditure of C\$25 million.
- ◆ The McDaniel Independent Geologist Report (part of the Agreement documents) concludes that there is the potential for up to 730 locations on the original 55,000 acre Caribou holding, again highlighting the up-size potential of Caribou

## ONGOING AND FUTURE WORK

- ◆ Current activities are concentrated on increasing the Caribou acreage to the planned 70,000 acres, and planning for the upcoming drilling as required under Stages 2 and 3 of the Farm-in.
- ◆ The Company has sourced 3D seismic data for the acreage, and is planning to reprocess the data, which is in the order of 10-15 years old.
- ◆ The key takeout is expected to elucidate the location of faults – these can cause issues with the completion of Hz wells, and thus need to be avoided.
- ◆ The Company will also estimate hydrocarbon resources during Stage 1.
- ◆ Plans are then to drill three wells off different pads – one in the south, one in the middle and one in the north of the acreage, with two wells targeting the Upper Montney and one the Middle Montney; these will allow the Company to calculate reserves for the drilled locations.

## INFRASTRUCTURE, OIL AND GAS MARKETS

- ◆ Developments in the Montney have resulted in significant infrastructure, including pipelines and gas treatment plants being installed - the current infrastructure has the capacity to deliver over 12Bcf/day of gas (including liquids-rich gas) to all of the North American markets, with the US being the largest market for Canadian gas.
- ◆ The main gas sales hubs for Montney include Westcoast Station 2 and AECO.
- ◆ Caribou is within 14km of Spectra Energy Corporation's ("Spectra") T-North pipeline, which delivers gas south to the Westcoast Station 2 hub, hence gas pricing will be based on that for Station 2.



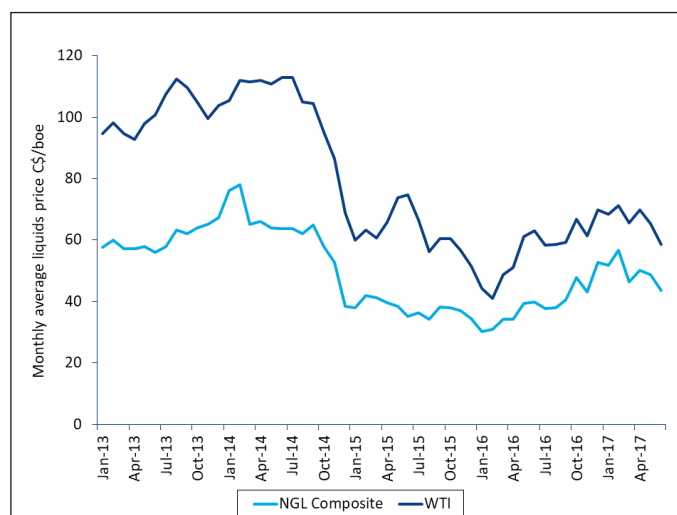
- ◆ Demand for condensate largely comes from the Alberta oil sands producers, where, as mentioned previously, the condensate is used in dilbit.
- ◆ Another potential market for Montney gas is in LNG for export, with a number of export LNG plants being planned for the west coast of Canada; a global glut of LNG supply, as well as opposition from various parties, has seen these plans largely shelved, including the cancellation of Progress's Pacific Northwest LNG Project in July 2017.
- ◆ The upshot of this is a current glut of gas out of the Montney, and hence falling prices - this has also been exacerbated by a bottleneck at Station 2 which is expected to be alleviated through increased connectivity into Alberta through new pipelines including the North Montney Pipeline.
- ◆ The lower gas prices (as shown in Figure 9) have resulted in the drive into the liquids rich areas, with the NGL composite and WTI prices shown in Figure 10.
- ◆ Figure 9 clearly shows the lower prices for the two main western Canadian gas hubs as compared to the US Henry Hub, with Station 2 also trading at a discount to AECO - some forecasters use a long term differential of C\$0.37/GJ between Station 2 and AECO.
- ◆ Note that Figure 10 shows composite NGL prices - these include wellhead condensate and lighter liquids recovered at gas plants.
- ◆ Canadian condensate tends to trade at similar prices to WTI crude (either at a slight discount or slight premium), with this expected to continue with increasing demand for diluents from the oil sands producers - this demand is fed from both Canada and imports from the US, with the Montney playing a critical role in meeting these needs; it is expected that the domestic supply shortfall will further increase in coming years.

**Figure 9: Comparative gas prices**



Source: Various

**Figure 9: Oil and NGL composite prices**



Source: Various

## TRANSACTIONS AND VALUATION

- ◆ Table 3 lists various land transactions in the Montney since the beginning of 2014 - this largely coincides in the significant increase in interest in the liquids rich areas of the Montney Formation.

**Table 3: Montney land transactions**

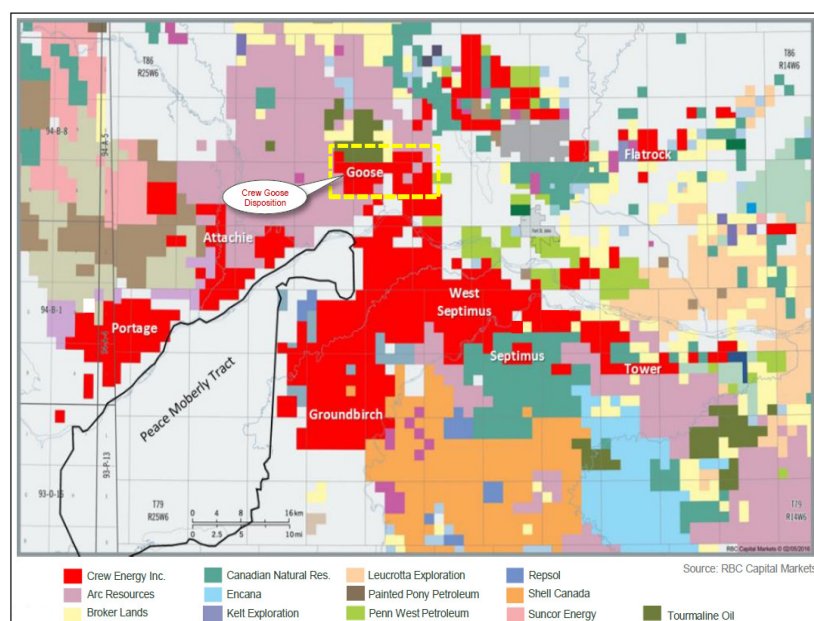
Date	Acquirer	Vendor	Description	Strike Name	Value (C\$ mm)	Land (acres)	Land Value (\$/acre)	Status*
Jan-14	SRX	YO	Asset deal	Nig	\$88	20,445	\$3,771	P
Apr-14	CR	DVN	Asset deal	Monias/Septimus	\$105	48,100	\$1,310	P
May-14	CKE	BC Land Sale	May 21 BC land sale	Umbach	\$14	13,680	\$1,016	U
Jun-14	Todd Energy	POU	JV deal	Birch/Umbach	\$90	23,400	\$3,569	P
Aug-14	NVA	TAQA	Asset deal	Elmworth	\$35	7,680	\$4,557	U
Nov-14	PGF	BC Land Sale	Nov 5 BC land sale	Bernadet	\$124	20,875	\$5,940	U
Nov-14	PPY	BC Land Sale	Nov 5 BC land sale	Townsend	\$67	9,280	\$7,198	U
Dec-14	ARX	BC Land Sale	Dec 10 BC land sale	Dawson/Parkland	\$9	4,900	\$1,755	U
Dec-14	LXE	BC Land Sale	Dec 10 BC land sale	Dawson/Parkland	\$7	6,400	\$1,031	U
Feb-15	KEL	RTK	Corporate acquisition	Inga/Fireweed	\$307	53,120	\$1,866	P
May-15	TOU	LXE	Asset deal	Doe	\$80			P
Jun-15	Black Swan	Carmel Bay	Corporate acquisition	Nig/Jedney	\$195	45,440	\$3,753	P
2Q15	ARX	RDS	Asset deal	Attachie	\$32	62,300	\$517	U
Dec-15	RMP	AB Land Sale	Land Sale	Gold Creek	\$8	29,440	\$280	U
Jan-16	MUR	ATH	Duvernay/Montney JV	Kaybob/Placid/Other	\$475	n/a	n/a	P
May-16	RMP	CKE/AIMCo	Asset deal	Gold Creek	\$10	12,800	\$688	P
Jun-16	BIR	ECA	Asset deal	Gordondale	\$625	40,920	\$15,274	P
Jul-16	PPY	Petronas	Swap	Daiber/Blair/Townsend	?	10,780	?	P
Jul-16	VII	POU	Asset deal	Kakwa	\$1,897	99,200	\$10,045	P
Aug-16	KEL	BTE	Asset deal	Inga/Fireweed	?	12,600	?	U
Aug-16	AAV	AB Land Sale	Land Sale	Glacier/Valhalla/Wembley	\$6	7,040	\$852	U
Sep-16	BNP	COP	Swap	Blueberry	?	36,400	?	P
May-17	CE1	Montney JV	Farm-in - 20%	Caribou	\$5	14,000	\$357	U
May-17	CE1	Montney JV	Farm-in - 37.5%	Caribou	\$12	26,250	\$457	U
May-17	CE1	Montney JV	Farm-in - 55%	Caribou	\$25	38,500	\$649	U
May-17	Not disclosed	CR	Land Sale	Goose	\$49	18,441	\$2,657	U
Apr-17	Leucrotta	Various	Land Sale	Doe/Mica Core	\$36	11,520	\$3,125	U
Mar-17	Conoco Phillips	PGF	Land Sale	Bernadet	\$92	23,424	\$3,928	U
Jul-17	Scott	BC Land Sale	July BC Land Sale	?	\$77	14,000	\$5,500	U

Source: Various, \* - P = producing, U = undeveloped

- ◆ This highlights the significant value in recent transactions, and the relative undervaluation of the Calima Farm-in - the weighted average of the price for undeveloped land (excluding the Calima Farm-in) is ~C\$2,500/acre, 4x the ultimate implied price for the Calima Farm-in.
- ◆ For the Calima Farm-in (for which we have included the three stages separately in Table 3) we have assumed a holding of 70,000 gross acres, with an ultimate position of 55%, or 38,500 net acres.

- ◆ This shows some very high recent prices for undeveloped land, including C\$77 million being paid for 14,000 acres in the July, 2017 BC land sale.
- ◆ Also of particular interest is the sale by Crew of the “Goose” package for C\$2,657/acre - this is undeveloped acreage adjacent to the productive West Septimus acreage in the Heritage area south of Fort St John (Figure 10).

Figure 10: Goose lands location



Source: Crew presentation

- ◆ The above, depending upon drilling success, gives a potential base case value of C\$2,500/acre for Caribou, thus valuing Calima’s net acreage at completion of the Farm-in at C\$100 million, or assuming an exchange rate of unity, A\$100 million - this is based on the 55% direct interest in the Project, plus a 2.1% indirect interest through the 11.5% holding in TSV-Montney, which will hold 18% of the Project at the completion of the Farm-in.
- ◆ Given the current fully diluted structure (606.7 million shares) this is equivalent to A\$0.165/share; however to allow the Company to complete the Farm-in we have assumed capital raisings totalling A\$20 million at A\$0.10/share - this increases the number of fully diluted shares to 806.7 million, and decreases the current per share Project value to A\$0.125/share.
- ◆ In addition there will be A\$0.025/share in cash, **giving a Company base case valuation/price target of A\$0.15/share.**
- ◆ **This is a base case scenario - we see significant upside in this with drilling success.**
- ◆ As a guide to future value, Table 4 below shows metrics for a sample of listed Montney producers, including enterprise value (“EV”) for net acre - EV is undiluted market capitalisation less cash plus debt.
- ◆ This shows the potential to grow the EV and hence acreage value of the Company with even a relatively modest producing well count.
- ◆ It needs to be noted however that these companies have fallen in value by between 25% and 50% since the beginning of 2017 with falls in gas prices, and thus the value per acre should be considerably higher with improvements in the Station 2 and AECO prices (these are currently at close to historical lows).

Table 4: Listed Montney producers

Company	Net Acreage	Completed Wells	2P Reserves (mmboe)	Production (boe/d)	Liquids Yield (bbl/mmscf)	EV (C\$ M)	EV/Acre (C\$)
Blackbird	69,696	6	56	868	144	\$211	\$3,034
Delphi	70,000	11	11	9,000	121	\$299	\$4,278
Storm	109,000	56	104	17,500	36	\$497	\$4,560
Leucrotta	115,840	11	23	2,800	50	\$278	\$2,398
Crew	285,440	150	324	20,468	57	\$876	\$3,069

Source: Company presentations - data largely sourced from latest quarterly results

## CAPITAL STRUCTURE

- ◆ Calima currently has 490.54 million ordinary shares (including 51.8 million shares escrowed until August 30, 2019) on issue.
- ◆ Performance and management rights and shares total 86.25 million, with 39.48 million, if vested, escrowed until August 30, 2019.
- ◆ The Company has 30 million unlisted options on issue, all escrowed until August 30, 2019.
- ◆ The top 20 hold 54.79% of shares, with management holding 22%.
- ◆ The Company has ~1,566 shareholders.

## RISKS

- ◆ **Drilling:** The key risk as the Company enters into Stages 2 and 3 of the Farm-in will be drilling and completion risk, and whether the wells will prove productive - although interpreted as having similar characteristics to the Laprise acreage, the production performance (including the liquids content) won't be known until the drilling has been completed - this may largely depend upon the pressure gradient. This risk is somewhat mitigated by the performance of the Laprise wells and the knowledge now built around Montney drilling which Calima is in a position to leverage off.
- ◆ **Markets:** This applies to both the Australian equity markets and the North American oil and gas markets, and will affect the share price and the ability to raise capital. This is somewhat mitigated by positive forecasts for the condensate market.
- ◆ **Funding:** Calima will need to raise at least a further C\$20 million over the coming few years to fully meet the Farm-in obligations - the ability to raise funds will depend upon the state of the markets.

## NOTE - USE OF HYDROCARBON EQUIVALENTS

- ◆ The use of "boe" and other hydrocarbon equivalents is based on energy equivalence and in company reports can be confusing or misleading when quoting a mixed product, as a boe of natural gas (6 mcf), although having the same energy as a barrel of crude oil, has a significantly lower price - care needs to be taken when analysing such information.
- ◆ We however have used the energy equivalence when quoting "boe" and "cfe" equivalence factors - if a price equivalence is used these will vary depending upon the different prices of the various constituents.

## BOARD AND MANAGEMENT

- ◆ **Mr Glen Whiddon – Executive Chairman:** Mr Whiddon has an extensive background in equity capital markets, banking and corporate advisory, with a specific focus on natural resources. Mr Whiddon holds a degree in Economics. He is currently Director of a number of Australian and international public listed companies in the resources sector. Mr Whiddon was formerly Executive Chairman, Chief Executive Officer and President of Grove Energy Limited, a European and Mediterranean oil and gas exploration and development company, with operations in Italy, Romania, Slovenia, Tunisia and the UK and Dutch North Seas. In 2002 Grove's Market capitalisation was less than C\$5 million. In April 2007, Grove was acquired by Stratic Energy Limited, a TSX-listed oil and gas company, for C\$150 million. Mr Whiddon is Executive Chairman of Auroch Minerals Limited, and a non-executive director of Fraser Range Metals Group Limited, Dorlemus plc and Hear Me Out Limited.
- ◆ **Dr Alan Stein – Managing Director:** Dr Stein has more than 25 years' experience in the international oil and gas industry. He was one of the founding partners of the geoscience consultancy IKODA Limited based in London and Perth and was the founding Managing Director of Fusion Oil & Gas plc and Ophir Energy plc. Fusion was listed on the UK AIM market in 2000 and made several discoveries offshore Mauritania before being sold in 2003. In early 2004, following the sale of Fusion, Dr Stein, together with Mr Jonathan Taylor, was one of the two founding executive directors of Ophir Energy plc. He held the position of Managing Director until 2011. Ophir was involved in several discoveries offshore Equatorial Guinea and Tanzania discovering more than 18 trillion cubic feet of

gas. Dr Stein is currently the Non-Executive Chairman of Hanno Resources Ltd and Sea Captair Limited and is a non-executive director of Bahari Holding Company Limited.

- ◆ **Mr Jonathan Taylor – Technical Director:** Mr Taylor has more than 25 years' experience in the international oil and gas industry. He started his career with Amerada Hess in the UK before moving to Clyde Petroleum plc where he was involved in international exploration including postings to Yemen and Myanmar. He relocated to Perth in 1998 to take up the role of Technical Director at Fusion Oil & Gas plc which built an extensive portfolio focused on Northwest and West Africa. Fusion was listed on the UK AIM market in 2000 and made several discoveries offshore Mauritania before being sold in 2003. Following the sale of Fusion, Mr Taylor, together with Dr Alan Stein, was one of the two founding executive directors of Ophir Energy plc serving initially as its Technical Director. Mr Taylor is currently a non-executive director of Helium One Limited and Citra Partners Ltd.
- ◆ **Mr Neil Hackett – Non-Executive Director:** Mr Hackett holds a Bachelor of Economics from the University of Western Australia, Post-graduate qualifications in Applied Finance and Investment, and is a Graduate (Order of Merit) with the Australian Institute of Company Directors. Mr Hackett is currently Non-Executive Chairman of Australian Securities Exchange listed entity Ardiden Ltd (ADV), and previous NED of African Chrome Fields Ltd (ACF), Modun Resources Ltd (MOU) and has held various ASX Company Secretary positions including Sundance Resources Ltd, Ampella Mining Ltd, and ThinkSmart Ltd. Mr Hackett is currently Chairman of WA State Government peak cycling organisation West Cycle Inc and company secretary of industrial footwear manufacturer Steel Blue Pty Ltd.

## BACKGROUND - THE HAVOC GROUP

- ◆ Note - the following has been copied directly from the Company's May 1, 2017 release regarding the Agreement.
- ◆ Havoc Partners LLP is a partnership established by five geoscientists who have worked together for a considerable number of years. Two of the partners, Alan Stein and Richard Higgins, first worked together at the geoscience consultancy IKODA Limited where Stein was one of the founding Directors. The whole team came together at Fusion Oil & Gas plc and then continued to work together at Ophir Energy plc before forming Havoc in 2014.
- ◆ Havoc's credentials are established via the key role the individuals played in building these two operating companies from the ground up and in the case of Ophir Energy plc to becoming a deepwater drilling operator, safely completing many projects in challenging frontier deepwater locations (often on behalf of larger joint venture partners). It is the combination of company building and financing experience as well as operational skills that makes the Havoc team unique.
- ◆ Fusion Oil & Gas plc evolved from a service-for-equity deal where IKODA invested approximately £130,000 of professional time to earn equity interests offshore Mauritania. These interests along with others acquired subsequently were vended into Fusion Oil & Gas plc in exchange for approximately 10 million shares which at IPO in 2000 were worth £5 million.
- ◆ Fusion was established in 1998 and raised £2 million of seed capital by way of a share issue priced between 4-5 pence. Fusion raised a further £15 million at IPO by the issue of shares at 50 pence. Seed capital investors made a greater than 10X on their investment over a 2 year period. At IPO Fusion was valued at £45 million and at its peak in mid-2001 following the Chinguetti discovery was worth £68 million. Seed capital investors could have realised a 15X return on their investment over a 3 year period and IPO investors a 1.5X return in less than 1 year.
- ◆ Fusion built a substantial portfolio of interests across West Africa and participated in several oil and gas discoveries offshore Mauritania. The Company drilled an onshore well in Ghana as operator and acquired numerous offshore 2D and 3D seismic surveys. The company was commended by a UN agency for its drilling operations in an environmentally sensitive area in Ghana.
- ◆ Fusion was sold to Sterling Energy plc in late 2003 for £40 million. In total Fusion raised £19 million through the issue of shares and realised £7.5 million from the sale of assets. The sale price implies a ROCE of 1.5.

- ◆ Ophir was started with a seed capital round in 2004 raising £5 million via the issue of shares at 25 pence. This was followed by a fully subscribed rights issue raising a further £5 million in 2005 via the issue of shares at 80 pence. Seed capital investors therefore contributed £10 million at an average price of 38 pence.
- ◆ Over the period 2007-2009 Ophir raised approximately £280 million via the issue of shares priced between £2.00 and £2.50. At IPO in 2011 Ophir raised £230 million via the issue of new shares at £2.50 giving Ophir a valuation of £800 million. At IPO the implied ROCE was 1.4 and seed capital investors had realised a 6.6X return on their investment over 7 years.
- ◆ In March 2012 when Ophir raised £150 million via the placing of shares at £4.90 IPO investors could have realised a 2X return on their investment over 9 months (seed capital 12.8X). The ROCE immediately prior to the March placing was 3.0.
- ◆ Ophir acquired an extensive portfolio of interests with involvement in eight jurisdictions and by 2008 was the fifth largest deepwater acreage holder in Africa. Ophir drilled its first deepwater wells as Operator in 2008 making gas discoveries in Equatorial Guinea and in 2010 made further gas discoveries offshore Tanzania with BG as the non-operating JV partner. All these wells were drilled without incident and with top quartile performance.
- ◆ Over the period 2008-2013 Ophir drilled 13 deepwater wells as Operator and had participated as partner in the drilling of 6 more. Of the wells drilled 14 were either discoveries or successful appraisals. The Tanzania and Equatorial Guinea projects, acquired and managed by the Havoc team, have gone on to discover 20 Tcf of gas in Tanzania and 3 Tcf of gas in Equatorial Guinea.
- ◆ At its peak in 2012, Ophir shares were trading above £6.00 and the company was worth in excess of £2 billion. IPO investors could have realised a 2.4X return on their investment over a period of only 1 year.
- ◆ The Havoc team were the founders and leaders of both Fusion and Ophir with responsibility ranging across all aspects of the business from technical and operations to commercialisation and corporate.



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