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Independent Resource Report - Calima Lands

Highlights:

- Independent resource auditor, McDaniel & Associates, estimates gross un-risked prospective resource of Calima Lands to be **2.1 Tcf of gas and 114.4 MMbbl of condensate and other natural gas liquids.**
- The resource estimation was based on new mapping undertaken by the Company as well as analysis of recent wells being drilled by Operators on adjacent land, such as Saguaro Resources Ltd.

Calima Energy Limited (ASX:CE1) (Calima or Company) operates 72,014 acres of drilling rights over acreage (Calima Lands) in British Columbia, Canada. McDaniel & Associates (McDaniel), a leading independent geological consulting firm with extensive experience of the Montney Formation, was commissioned to prepare an evaluation of the crude oil, natural gas and natural gas products prospective resources of the Calima Lands.

McDaniel's best estimates of total un-risked prospective resources within the Calima Lands are summarised in Table 1.

		JV 100% W.I.[4]	Calima 55% W.I.[4, 5]
Natural Gas (MMcf)	Gross	2,168,188	1,192,504
	Net after Royalties	1,689,323	929,127
Condensate (Mbbl)	Gross	54,205	29,813
	Net after Royalties	45,327	24,930
Natural Gas Liquids[1] (Mbbl)	Gross	60,227	33,125
	Net after Royalties	49,879	27,433
TOTAL LIQUIDS[2] (Mbbl)	Gross	114,432	62,938
	Net after Royalties	95,206	53,363
TOTAL MMBOE[3]	Gross	475,797	261,688
	Net after Royalties	376,760	207,218

Table 1 – Best estimate of total un-risked prospective resources of the Calima Lands as estimated by McDaniel & Associates effective December 31st, 2017.

Notes:

(1) Natural Gas Liquids (propane and butane) volumes do not include Condensate.

(2) Sum of Condensate and Natural Gas Liquids. Based on public domain data and the results of wells drilled on adjacent land McDaniel estimate that the average condensate to gas ratio for wells in the Calima Lands would be 23 bbl/MMcf (wellhead condensate/gas ratio). Additional liquids would be stripped from the gas upon processing. The adjacent Operator, Saguaro, recovers more than 50 bbl/MMcf after processing and obtains more than 50% of its revenue from condensate and other natural gas liquids. (Saguaro Resources Ltd. Investor Presentation, January 2018)

(3) Barrels of Oil Equivalent based on 6:1 for Natural Gas, 1:1 for Condensate and C5+, 1:1 for Ethane,1:1 for Propane, 1:1 for Butanes. BOE's may be misleading, particularly if used in isolation. A BOE conversion ratio of 6 Mcf:1 bbl is based on an energy equivalency conversion method primarily applicable at the burner tip and does not represent a value equivalency at the wellhead.

(4) Prospective resources are the estimated quantities of petroleum that may potentially be recovered by the application of a future development project(s) related to undiscovered accumulations. These estimates have both an associated risk of discover and a risk of development. Further exploration appraisal and evaluation is required to determine the existence of a significant quantity of potentially moveable hydrocarbons. The prospective resources have also been classified using a deterministic method of petroleum reserves estimation having an evaluation date of December 31st, 2017.

(5) Company has the right to acquire up to 55% of the Calima Lands pursuant to a farmin agreement with TSV-Montney Ltd and TMK-Montney Ltd. Details of the farmin agreement were announced in the Company Prospectus dated June 30, 2017.

Alan Stein, Calima's Managing Director commented:

> *"This is an excellent result which significantly increases our confidence in the potential of the Montney Formation in the Calima Lands. This independent estimate of prospective resources confirms the significant scale of the project. With an estimated 2.1 Tcf of recoverable gas and 114 Mmbbl of condensate and other natural gas liquids, the Calima Lands are able to be developed as a standalone project. We look forward to providing additional information related to the project as we progress towards the multi-well drilling campaign planned for the end of the year. The drilling campaign will convert some of the prospective resources into reserves or contingent resources and will also convert a significant number of the drilling leases into longer tenure production leases. Both of these outcomes will have a bearing on how we monetise this investment"*

The prospective resource estimates have been prepared and presented in accordance with the Canadian standards set out in the Canadian Oil and Gas Evaluation Handbook (COGEH) and National Instrument 51-101 (NI 51-101), and have been classified in accordance with the Society of Petroleum Engineers' Petroleum Resources Management System (SPE-PRMS) and reported in the most specific resource class in which the prospective resource can be classified under SPE-PRMS.

In accordance with the applicable guidelines the volumes presented in the McDaniel's report were risked for the chance of commerciality. The chance of commerciality is the product of the chance of discovery and the chance of development. The chance of discovery in an unconventional resource such as the Montney is associated with the likelihood that commercially viable concentrations of hydrocarbon within a given region exist (i.e. sufficient thickness and porosity), and not necessarily whether hydrocarbons of any concentration will be found. The presence of hydrocarbons within the Montney resource is considered broadly mappable; however, area

specific thicknesses and differences in reservoir quality will ultimately determine commercial viability. The chance of discovery factor is assessed to be 75% given the limited data points within the Calima Lands at this time and a chance of development factor was assessed to be 70% as the Company is in a relatively early stage of development.

Set out below is a brief description of the basis on which the prospective resources are estimated.

Property Overview

The Calima Lands are located approximately 170 kilometres northwest of the City of Fort St. John, British Columbia. The Calima Lands comprise approximately 112 sections of land where potential exists for development of Montney resources.

Regional Geology

The Triassic aged Montney Formation is bounded unconformably below by the Belloy Formation and conformably above by the phosphatic shales of the Doig Formation. The Montney is interpreted to consist of sediments deposited in a shallow marine shelf environment in which sediments flowed into the basin in a south-westerly direction as a series of channel and fan deposits.

The Montney Formation is present over a large geographical area stretching from central Alberta to north-eastern British Columbia (Figure 1). Early discoveries targeted high permeability coquina and sandstone facies in central and western Alberta on the eastern up-dip edge of the formation. Horizontal drilling and multi stage fracturing has made the deep, tight fine-grained sands and siltstone facies on the western down-dip edge economic in many areas.

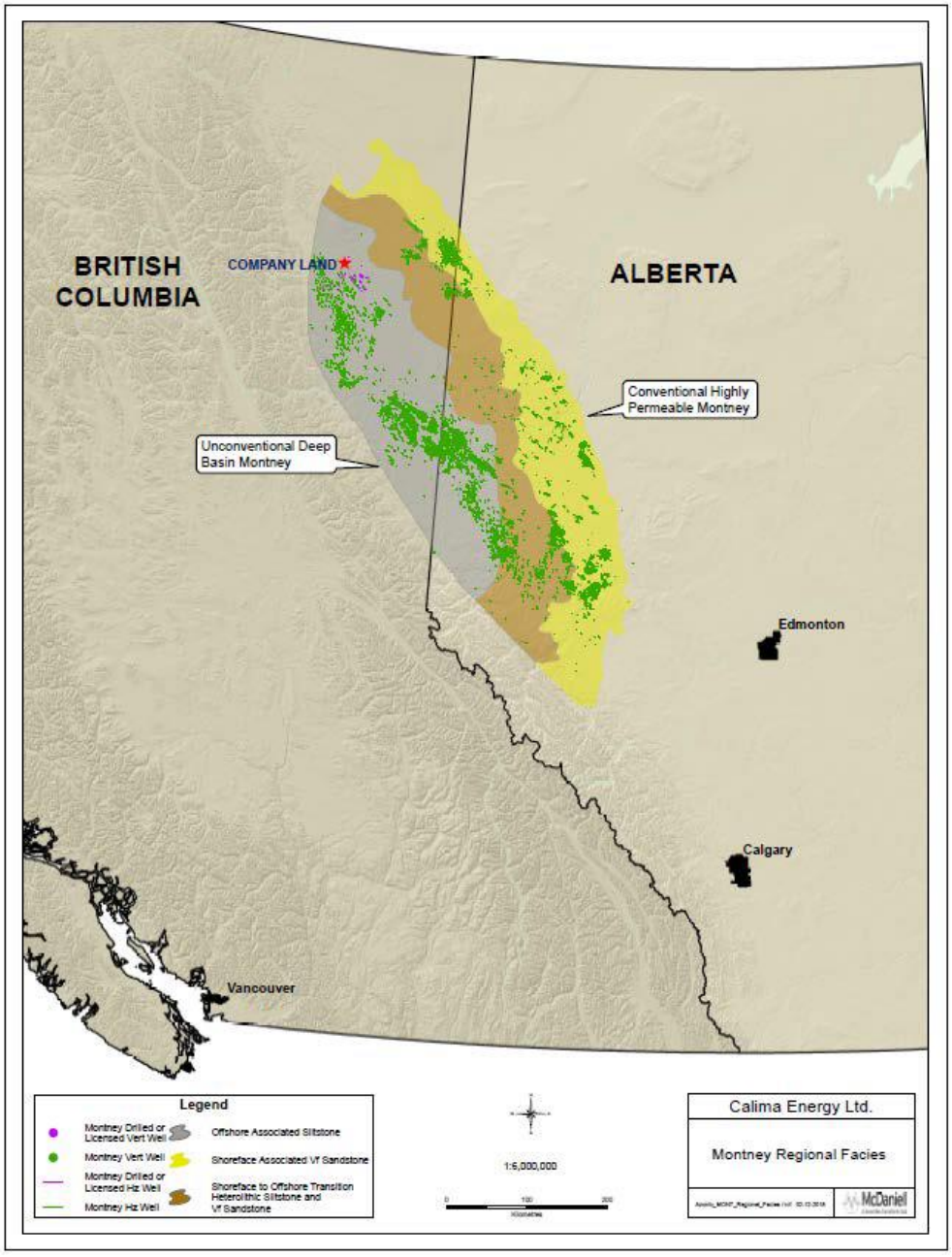

Figure 1 – Montney Formation, Regional Facies Map

Horizontal wells are currently being drilled and licensed adjacent to the Calima Land. The most active operators in the area are Progress Energy, Black Swan Energy and Saguaro Resources (Figure 2).

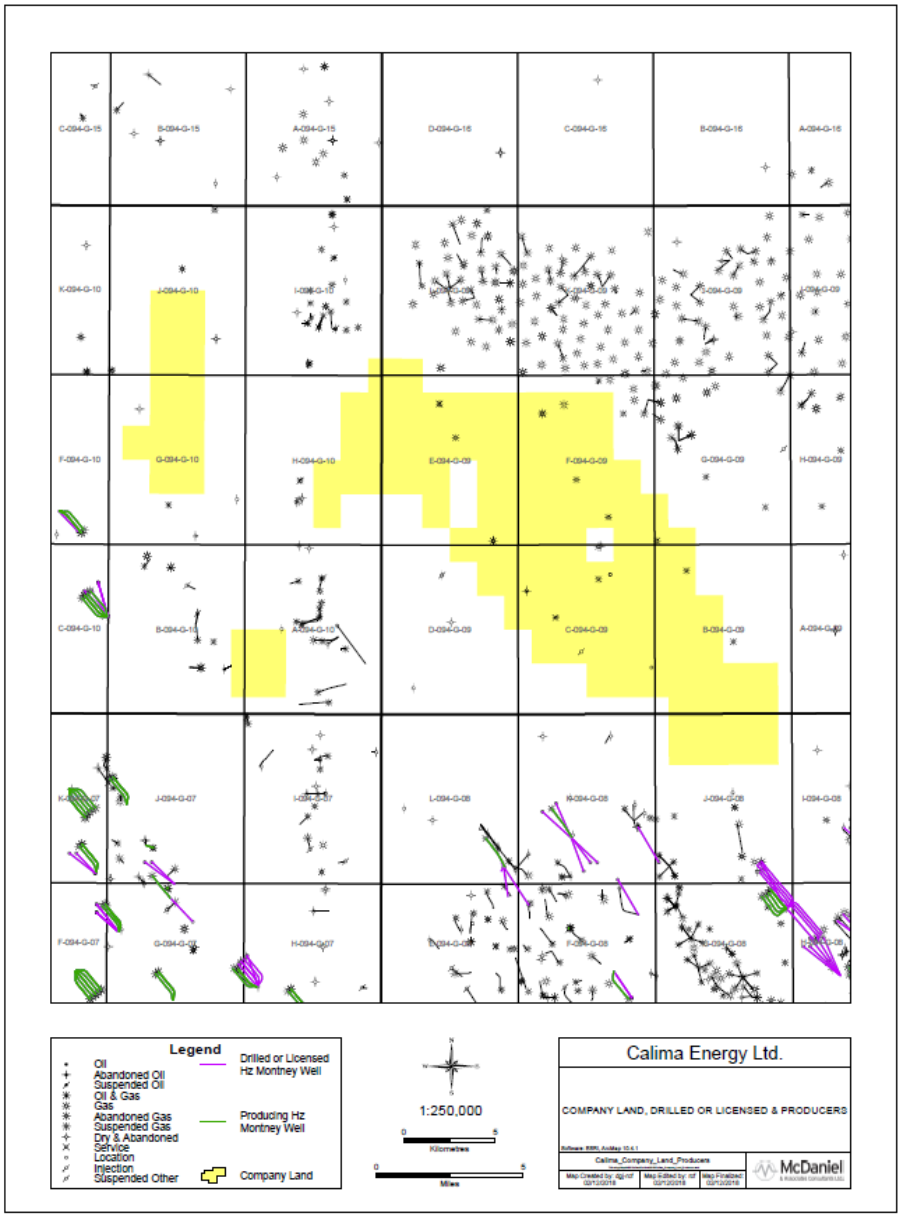

Figure 2 - Producing Montney wells, Drilled (non-producing) wells and Licensed Montney wells.

Methodology

The gross thickness of the Montney Formation and reservoir quality vary depending on geographical area. On the Calima Lands, the Montney section is approximately 240m thick. Lithological variations are evident both vertically and laterally; in general, the upper portion of the section is a coarse-grained dolomitic sand, the middle interval is a fine-grained laminated sand and the Lower Zone is comprised of fine- to very fine-grained feldspathic, dolomitic sand, laminated with shale.

The Montney Formation has been contour mapped using vertical control points on and offsetting the Calima Lands. Continuous sand packages have been correlated across the acreage and mapped for reservoir parameters independently. The “Upper Montney” is mapped as six different units referred to as the Montney A through D, F and G (A-G). The pay thickness of these combined zones is over 100m. Porosity ranges between four and five percent (4-5%). The “Lower Montney” is mapped as two units, the Montney H and Sexsmith.

Porosity for these zones is between four and five percent and when these three zones are combined the pay thickness is over 50 meters. The stratigraphic zones are shown on the type log (Figure 4).

Lateral and vertical changes in grain density are evident throughout the Montney Formation. These differences are due to changes in mineralogy and facies which was influenced by sediment supply and deposition. Clean coarse grained shoreface deposits typically have lower grain densities than distal low energy deposits, the lower energy deposits often have higher concentrations of limestone and dolomite. Average grain densities taken from core in the area are shown in Table1.

Montney Zone	Fluid Density (g/cc)	Grain Density (g/cc)
A	1.00	2.690
B	1.00	2.700
C	1.00	2.688
D	1.00	2.687
F	1.00	2.703
G	1.00	2.711
H	1.00	2.697
Sexsmith	1.00	2.712

Table 1 - Montney Grain Density

Net pay and porosity values were determined from the available well logs and core in the study area and used to estimate the Discovered GIIP. An effective porosity was calculated to account for kerogen and other organic matter present within the reservoir and is approximated by removing the estimated shale volume from the density porosity. The formula for effective porosity from the density log is below.

Effective porosity (Density) = Density porosity x (1-Shale Volume)

Shale Volume = (GR log – GRcln) / (GRshl-GRcln)

Density Porosity = (RhoM - RhoB) / (Rhom - RhoF)

Where:

Rhob = Bulk Density

RhoF = Fluid Density

GRcln = Clean gamma ray

GRshl = Shale gamma ray

A three percent (3%) cut-off was then applied to the effective porosity to determine the net pay. The porosity for each well is an average effective porosity over the pay interval.

Water saturations were mapped spatially using values calculated from logs using the Archie equation. Water saturation values compare favourably to core water saturations. Formation water resistivity of 0.075 ohm meters was used. Values for “a”, “m” and “n” are 1.0, 1.5 and 1.5 respectively.

The calculated net pay, porosity and water saturation are shown in Figure 4 on the 200/b002-E/094-G-09 type log along with stratigraphic zones and tops.

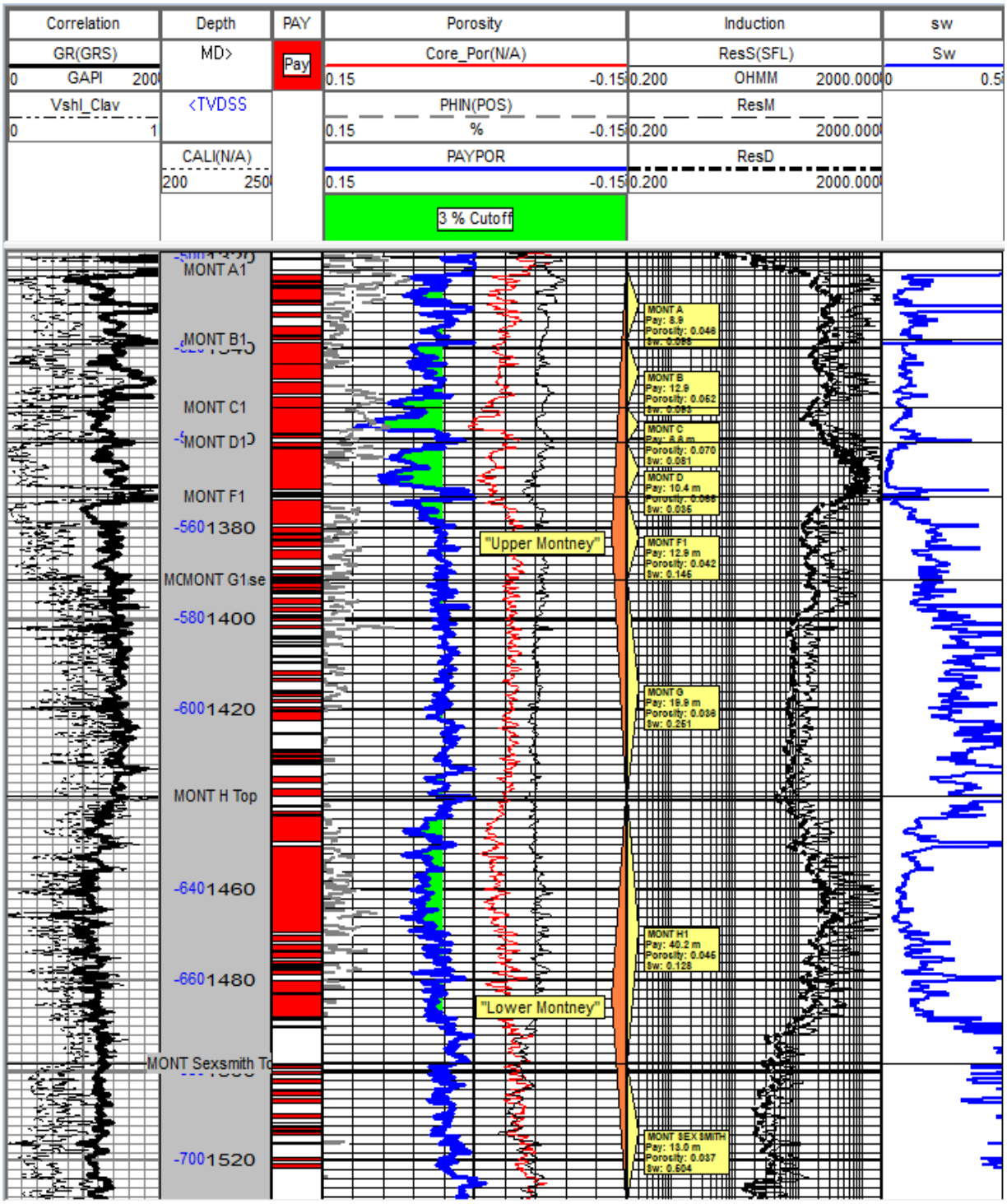

Figure 4 - Type log from well 200/b002-E/094-G-09

Pressure maps for the Upper and Lower Montney were created from proprietary and public data sources. Within the Company Land, the reservoir is slightly over pressured in the Upper Montney with a pressure gradient averaging 11 kPa/m and the Lower Montney is also over pressured with an average pressure gradient of 12.4 kPa/m.

All of the various reservoir parameters are then combined to calculate the exploitable free original gas in-place (OGIP). McDaniel's estimate of exploitable OGIP does not include estimates of adsorbed gas in-place. Maps of net pay, porosity and the exploitable OGIP per 256Ha (640 acres) were generated for eight individual zones.

Original Gas in Place and Reservoir Parameters

Eight individual zones have mapped separately for net pay, porosity, water saturation and structure. These reservoir parameters were used along with the corresponding pressure gradient to calculate original gas in place per quarter unit for each of the eight individual zones. The resulting gas in place was then combined to calculate the gas in place for the Upper and Lower Montney. The combined OGIP and the weighted average parameters are shown in Table 2.

Zone	Pay (m)	Area (Ha)	Porosity (%)	Sw (%)	PhiH	HCPV	Z	Depth (TVD)	Gradient	Pressure (kPa)	Temp (C)	bcf
Upper Montney	72.7	29133	4.8	18.1	3.49	2.88	0.79	1456.4	11.0	16038	43.7	5375
Lower Montney	43.9	29133	4.5	24.0	1.96	1.48	0.81	1546.9	12.4	19279	46.4	3220

Table 2 - Combined OGIP & Average Reservoir Parameters.

Resource Estimates

Type curve analysis was performed on both the Upper and Lower Montney zones using nearby analogs operated by Saguaro who are a main operator near the Calima Lands. Saguaro has drilled 59 wells to date, 21 of which have been drilled from 2016 onwards. During this recent period, average well length has increased from approximately 1,900m to 2,500m, while proppant loading has increased from an average of 1 to 1.3 tonnes per metre.

On a normalized per 100m basis, the Saguaro's recent wells look capable of recovering anywhere from 0.2 to 0.4 Bcf with the Lower Montney wells averaging slightly lower. Figure 5 displays the estimated ultimate recovery normalized to horizontal length for seven (7) wells within the Upper Montney and 14 wells within the Lower Montney. Derived type curves have also been displayed.

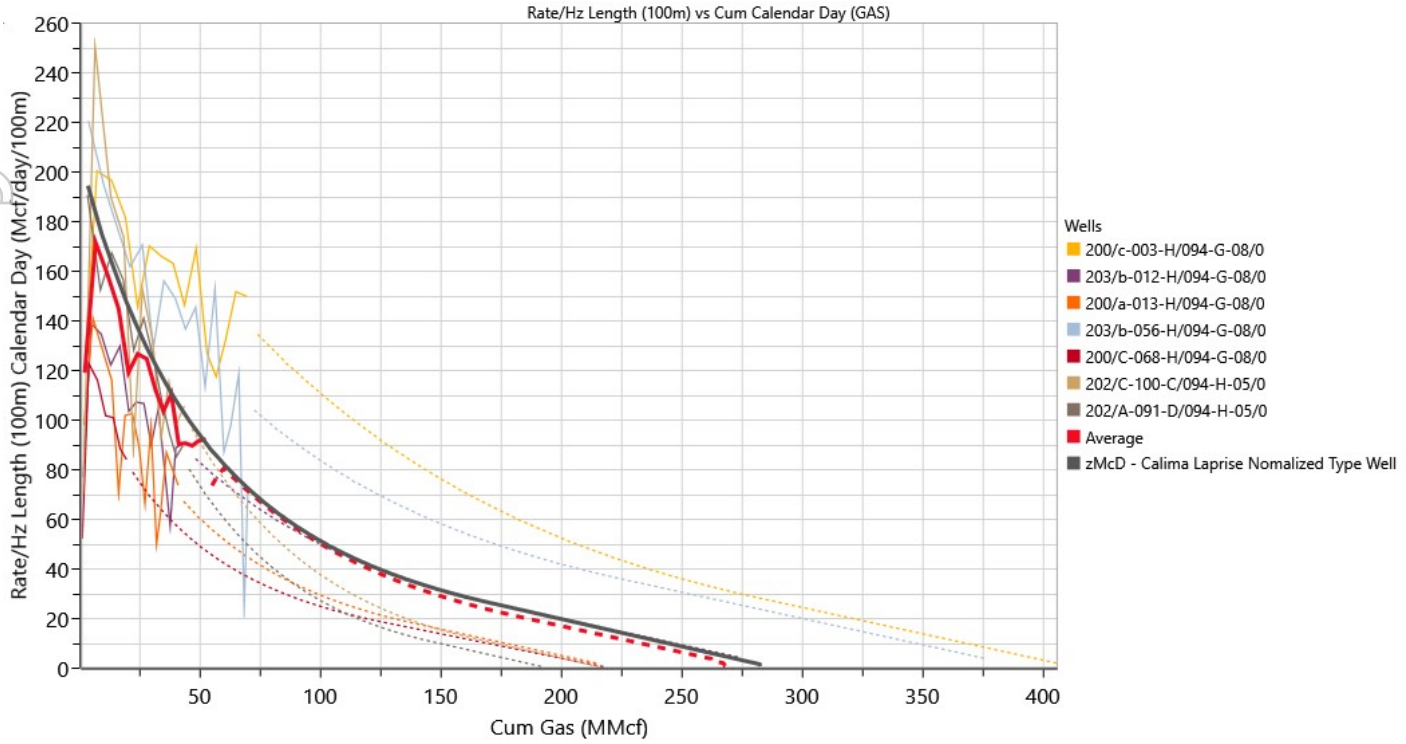

Figure 5 – Upper Montney Wells (7x Saguaro Wells) Normalized by Hz Length incl. Type Curve

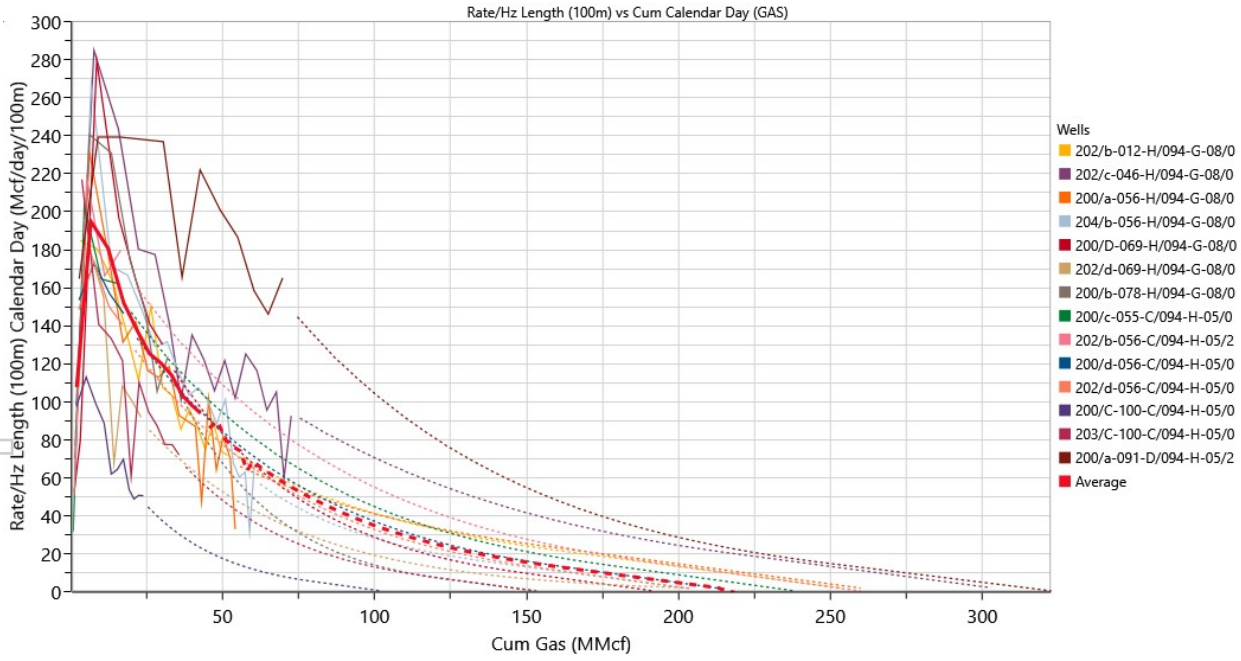

Figure 6 – Lower Montney Wells (14x Saguaro Wells) Normalized by Hz Length incl. Type Curve

The resulting type curve parameters are shown in Table 3.

	MONT U	MONT L
IP (Mcfpd)	5,100	4,250
EUR (MMcf)	6,800	5,600
bN	1.4	1.4
Min Decl %	8.00	8.00
Well Hz Length (m)	2,500	2,500

Table 3: MONT U & L Type Well Parameters

The data in the public domain supports that the average condensate to gas ratio (CGR) for these wells is approximately 23 bbl/MMcf (wellhead condensate, raw gas ratio).

Ring fences were determined within the Company lands based on OGIP of the Upper and Lower Montney zones individually. Ring fences consisted of lands where the OGIP for a given zone averaged over 50 Bcf per section,between 30 to 50 Bcf per section, and less than 30 Bcf per section.

Based off the determined ring fences, the percentage of lands with more than 30 Bcf per section of OGIP was calculated to be approximately 70 percent. The 70 percent was then used as a representation of what would likely become future development lands and applied as an aerial exploitation factor over Calima's acreage. The areal exploitation factor accounts for areas of reservoir that are not likely to be developed due to surface and subsurface constraints such as pad placement inefficiencies, drainage orientation relative to lease boundaries and offset and removal of areas with higher water saturation or lower OGIP that have yet to be fully resolved pending additional well control.

Well counts were determined by taking the future development lands derived from the above method and dividing by the average drainage area for 400 metre well spacing and 2,500 metre well length. Well spacing within the Montney resource in British Columbia commonly ranges between 300 metres to 400 metres depending on OGIP of the resource. Operators are also commonly pursuing increased lateral length on drills to improve economic efficiency as initial production and estimated ultimate recovery both seem to have a direct relationship with the length of a well. Saguaro's corporate presentation has indicated plans to pursue lateral lengths of 2,500 metre going forward.

Recovery factors were determined based off the type curve derived above and calculated well counts. The table below summarizes OGIP, applied areal exploitation factor, drainage area, well counts and resulting recovery factors.

Zone	Area Acres	OGIP MMcf	Areal Exploitation Factor %	Drainage Area Acres	WPS #	Total Well Count #	EUR per well Bcf	RGIP MMcf	Recovery Factor %
MONT U	71,990	4,198,148	70	250	2.6	201	6.8	1.381.191	47
MONT L	71,987	3,220,386	70	250	2.6	201	5.6	1.127.135	50

Table 4 - Montney Upper & Lower OGIP, Well Count & Recovery Factor Summary

Qualified petroleum reserves and resources evaluator statement

The petroleum resources information in this announcement is based on, and fairly represents, information and supporting documentation in a report compiled by technical employees of McDaniel and Associates Ltd, a leading independent Canadian petroleum consulting firm registered with the Association of Professional Engineers and Geoscientists of Alberta, and was subsequently reviewed by Mr Mark Sofield, a consultant to the Company. Mr Sofield holds a BSc. Geology (Hons), is a Geologist with over 20 years of experience in petroleum geology, geophysics, prospect generation and evaluations, prospect and project level resource and risk estimation and is a member of the American Association of Petroleum Geologists. Mr Sofield has consented to the inclusion of the petroleum resources information in this announcement in the form and context in which it appears.

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About Calima Energy

Calima Energy Limited (ASX:CE1) is an international oil and gas company with interests in an area of British Columbia that is considered to be highly prospective for the Montney Formation.