



14 July 2020

## Resource Upgrade – Driven by Tommy Lakes Acquisition

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### Highlights:

- McDaniel & Associates have undertaken an updated independent resource assessment following the recent acquisition of the Tommy Lakes facilities.
- The Company's Contingent Resources has been elevated to the Development Pending category which would be categorised as 2P Reserves upon securing funding. Additionally, these Resources lie within the acreage recently secured under a **10 year Continuation Lease**.
- The best estimate gross un-risked Contingent Resources – Development Pending is **248.9 Bcfg** and **12.4 Mmbo<sup>1</sup>**.
- The best estimate gross un-risked Contingent Resources (2C) Development on Hold and Development Pending is **888.1 Bcfg** and **44.4 Mmbo<sup>1</sup>**.
- The total best estimate of gross un-risked Prospective Resources (2U) is **1.68 Tcfg** and **84 Mmbo<sup>1</sup>**.
- Estimated Ultimate Recovery (EUR) 8.4 Bcf per well yielding ~50 barrels per Mmcf gas.

	Prospective Resource (2U)	Contingent Resource (2C)		
		Dev on hold	Dev Pending	Total Contingent
Natural Gas (mcf)	1,680,391	639,208	248,904	888,113
Total Liquids (mbbl)	84,036	31,947	12,468	44,415
Total PJe	2,228	847	330	1,178
Total Tcfe	2.18	0.83	0.33	1.15

**Calima Energy Limited (ASX:CE1)** (Calima or Company) currently operates more than 60,000 acres of drilling rights (Calima Lands) in British Columbia, Canada. Following the acquisition of Tommy Lakes the Company is pleased to advise that **248.9 billion cubic feet of gas** and **12.4 million barrels of light oil and natural gas liquids** of Contingent Resources have been upgraded to Development Pending. The Company now regards a significant portion its Montney acreage as being development ready subject only to securing the necessary funding to construct a tie-in pipeline. Once the Company secures funding then according to the reporting standards these Development Pending resources could be classified as 2P reserves.

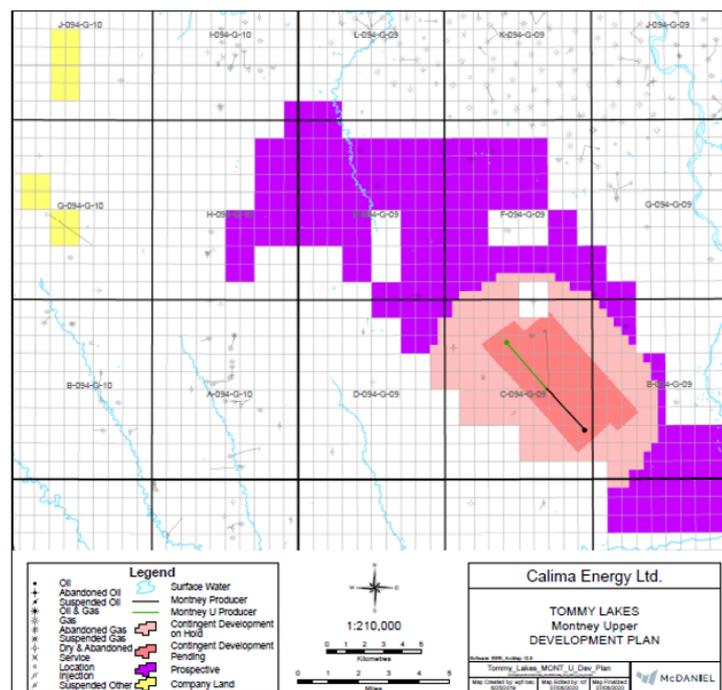
<sup>1</sup> light oil and natural gas liquids



McDaniel & Associates (McDaniel) have evaluated crude oil, natural gas and natural gas products prospective resources of the Calima Lands according to 2018 PRMS standards. McDaniel's Best Estimates of total un-risked contingent and prospective resources within the Calima Lands are summarised in Tables 1A/1B and Figure 1. In comparison the 2019 assessment (ASX announcement 8 July 2019) contained only Contingent Development on Hold (2C) and Prospective (2U) resources (Table 3).

### Micheal Dobovich, Calima's Canada President commented:

*"Our 2019 drilling campaign confirmed the significant resource potential of our Montney acreage and subsequently the acquisition of Tommy Lakes infrastructure has resulted in the elevation of 248.9 billion cubic feet of gas and 12.4 million barrels of light oil and natural gas liquids into the Development Pending category. Once funding is secured this would be classified as 2P reserves. The significant scale of the opportunity offered by the Company's Montney position is clearly evident from the McDaniel assessment and given that all of our contingent resources lie within leases that do not expire until 2029, our tenure is secure while we time our development appropriately. Despite the headwinds of current oil pricing, the Canadian gas market shows continued signs of long-term improvement ensuring the Company is well positioned to initiate a development program as oil prices rise towards pre-Covid levels."*



**Figure 1 - Map of Calima Lands defining the areas of Prospective (purple) and Contingent Development on hold (light pink) and Contingent Development pending (dark pink) Resources.**



1A Gross Unrisked Contingent Resources <sup>4</sup> (2C) based upon 124 wells over 20,517 acres		Development on hold	Development Pending	Total 2C
Natural Gas (mmcf)	Gross	639,208	248,904	888,113
	Net after Royalties	551,779	217,618	769,397
Condensate (mdbl)	Gross	14,201	5,542	19,743
	Net after Royalties	12,244	4,814	17,058
Natural Gas Liquids <sup>1</sup> (mdbl)	Gross	17,746	6,926	24,672
	Net after Royalties	15,301	6,016	21,317
TOTAL LIQUIDS <sup>2</sup> (mdbl)	Gross	31,947	12,468	44,414
	Net after Royalties	27,545	10,830	38,375
TOTAL mboe <sup>3</sup>	Gross	138,481	53,952	192,433
	Net after Royalties	119,509	47,100	166,608

1B Gross Unrisked Prospective Resources <sup>5</sup> (2U) based upon 234 wells over 58,974 acres		
Natural Gas (mmcf)	Gross	1,680,391
	Net after Royalties	1,416,083
Condensate (mdbl)	Gross	37,356
	Net after Royalties	31,850
Natural Gas Liquids <sup>1</sup> (mdbl)	Gross	46,680
	Net after Royalties	39,800
TOTAL LIQUIDS <sup>2</sup> (mdbl)	Gross	84,036
	Net after Royalties	71,650
TOTAL mboe <sup>3</sup>	Gross	364,101
	Net after Royalties	307,664

**Table 1A – Best estimate Unrisked Contingent (2C) Resources and Table 1B - Prospective (2U) Resources of the Calima Lands as estimated by McDaniel & Associates effective 31 March 2020**

**Notes to accompany Tables 1A & 1B**

(1) Natural Gas Liquids refers to the product recovered after processing. Approximately 10 bbl/MMcf of the product recovered after processing is also condensate (C5) see also Note 2.

(2) Sum of Condensate and Natural Gas Liquids. Based on Company drilling results 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 22.5 bbl/MMcf (wellhead condensate/gas ratio) for the Middle Montney and 17.5bbl/MMcf for the Upper Montney. Additional liquids 25bbl/MMCF would be stripped from the gas upon processing comprising 6 bbl/MMcf of C3, 9 bbl/MMcf of C4, and 10 bbl/MMcf of C5+ (Condensate).

(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) Contingent Resources (2C) - Those quantities of petroleum estimated, as of a given date, to be potentially recoverable from known accumulations by application of development projects, but which are not currently considered to be commercially recoverable owing to one or more contingencies. Contingencies may include factors such as economic, legal, environmental, political, and regulatory matters, or a lack of markets. Contingent resources are further categorized in accordance with the level of certainty associated with the estimates and may be sub-classified based on project maturity and/or characterized by the economic status. The Contingent Resources (2C) in Tommy Lakes have been sub-classified as a "Development on Hold" and "Development Pending" as the accumulation is well defined and does represent a viable drilling target. The Contingent Resources have been classified using a deterministic method of estimation having an evaluation date of 31 March 2020.



(5) Prospective resources (2U) 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 discovery and a risk of development. Further exploration appraisal and evaluation is required to determine the existence of a significant quantity of potentially moveable hydrocarbon. The Prospective Resources (2U) in Tommy Lakes have been sub-classified as a "Prospect" as the accumulation is well defined and does represent a viable drilling target. The prospective resources have also been classified using a deterministic method having an evaluation date of 31 March 2020.

(6) Pre-Development – A pre-development study is an intermediate step in the development of a project scenario. The amount of information that is available for the reservoir of interest is greater than for a conceptual study. In particular, the petroleum initially in place has been reasonably well defined and the remaining uncertainty lies largely in the recovery factor and the economic viability.

(7) The resources have been calculated on a reduced land position of 58,981 acres in which Calima Energy holds a 100% working interest. This includes 33,643 acres (49 sections) held under a 10-year Continuation Lease (valid to 2029) and the balance held leases that expiring in 2021/2.

The current resource estimate now includes both Best Estimate Contingent Development on Hold and Development Pending (2C) and Prospective (2U) resources (Tables 2A, 2B). In comparison the 2019 assessment (ASX announcement 8 July 2019) contained only Contingent Development on Hold (2C) and Prospective (2U) resources (Table 3).

	Natural Gas <sup>1</sup> (mmcf)	Condensate (mbbl)	Natural Gas Liquids (mbbl)	TOTAL LIQUIDS <sup>2</sup> (mbbl)	TOTAL <sup>3</sup> mboe
2A – 2020 Contingent Resource Dev on Hold (2C)	639,208	14,201	17,746	31,947	138,481
2A – 2020 Contingent Resource Dev Pending (2C)	248,904	5,542	6,926	12,468	53,952
<b>TOTAL 2A – 2020 Contingent Resource (2C)</b>	<b>888,113</b>	<b>19,743</b>	<b>24,672</b>	<b>44,414</b>	<b>192,443</b>
2A - 2019 Contingent Resource (2C) <sup>4</sup>	904,897	20,115	25,136	45,251	196,067

	Natural Gas <sup>1</sup> (mmcf)	Condensate (mbbl)	Natural Gas Liquids (mbbl)	TOTAL LIQUIDS <sup>2</sup> (mbbl)	TOTAL <sup>3</sup> mboe
2B - 2020 Prospective Resource (2U)	1,680,391	37,356	46,680	84,036	364,101
2B - 2019 Prospective Resource (2U)	2,295,070	51,017	63,752	114,769	497,280

**Table 2A – McDaniel 2019 and 2020 Best Estimate Gross Unrisked Contingent Resource and 2B Gross Unrisked Prospective Resource (refer Table 1 footnotes and see Figure 1 for areal distribution)**

### Method of Preparation

The 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 2018 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.

### ***Resource Classification***

The Contingent Resources (2C) in Tommy Lakes have been sub-classified as a "Development on Hold" as the accumulation is well defined and does represent a viable drilling target and "Development Pending" on the basis that the Company acquired the Tommy Lakes facilities which provides Calima with processing capacity and access to the NorthRiver Jedney pipelines and facilities to get product to market. The drilling target is further confirmed by the high level of Montney development in the area by offsetting producers. For the Montney Upper and Middle zones, a chance of development of 70% have been assigned to the Development on Hold Resources and 90% to the Development Pending Resources as the Company is in relatively early stages of development at this point. A technology status of "established" (meaning existing well drilling and completion practices) and a project evaluation scenario of Pre-Development<sup>6</sup> also apply as the amount of petroleum initially in place has been reasonably well defined but there is uncertainty around actual performance of the wells and future processing capacity<sup>4</sup>.

The Prospective Resources (2U) in Tommy Lakes have been sub-classified as a "Prospect" as the accumulation is well defined and does represent a viable drilling target. This project maturity status sub-classification is further confirmed by the high level of Montney development in the area by offsetting producers. For the Montney Upper, Middle and Lower zones, a chance of discovery factor of 90% (previously 90%) and a chance of development of 70% have been assigned as the Company is in relatively early stages of development at this point.

### ***Methodology***

The gross thickness of the Montney Formation and reservoir quality vary depending on geographical area. In the Tommy Lakes Area, the Montney section is approximately 240 metres 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 Company lands. Continuous sand packages have been correlated across the acreage and mapped for



reservoir parameters independently. The “Upper Montney” is mapped as five different units referred to as the Montney A through D, and F. The pay thickness of these combined zones is over 90 metres. Porosity ranges between 4% and 5%. The “Middle Montney” is mapped as two units, the Montney G and H. The combined thickness is over 90 metres, and the porosity ranges between 4% and 5%. The “Lower Montney” is mapped as the Montney Sexsmith and Basal zones. Porosity for these zones is between four and five percent and when these three zones are combined the pay thickness is over 50 metres.

Lateral and vertical changes in grain density are evident throughout the Montney. 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.

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. A 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.

Pressure maps for the Montney were created from proprietary and public data sources. On Company land the reservoir is slightly over pressured in the Upper Montney with a pressure gradient averaging 10.7 kPa/m, the Middle and Lower Montney are 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).

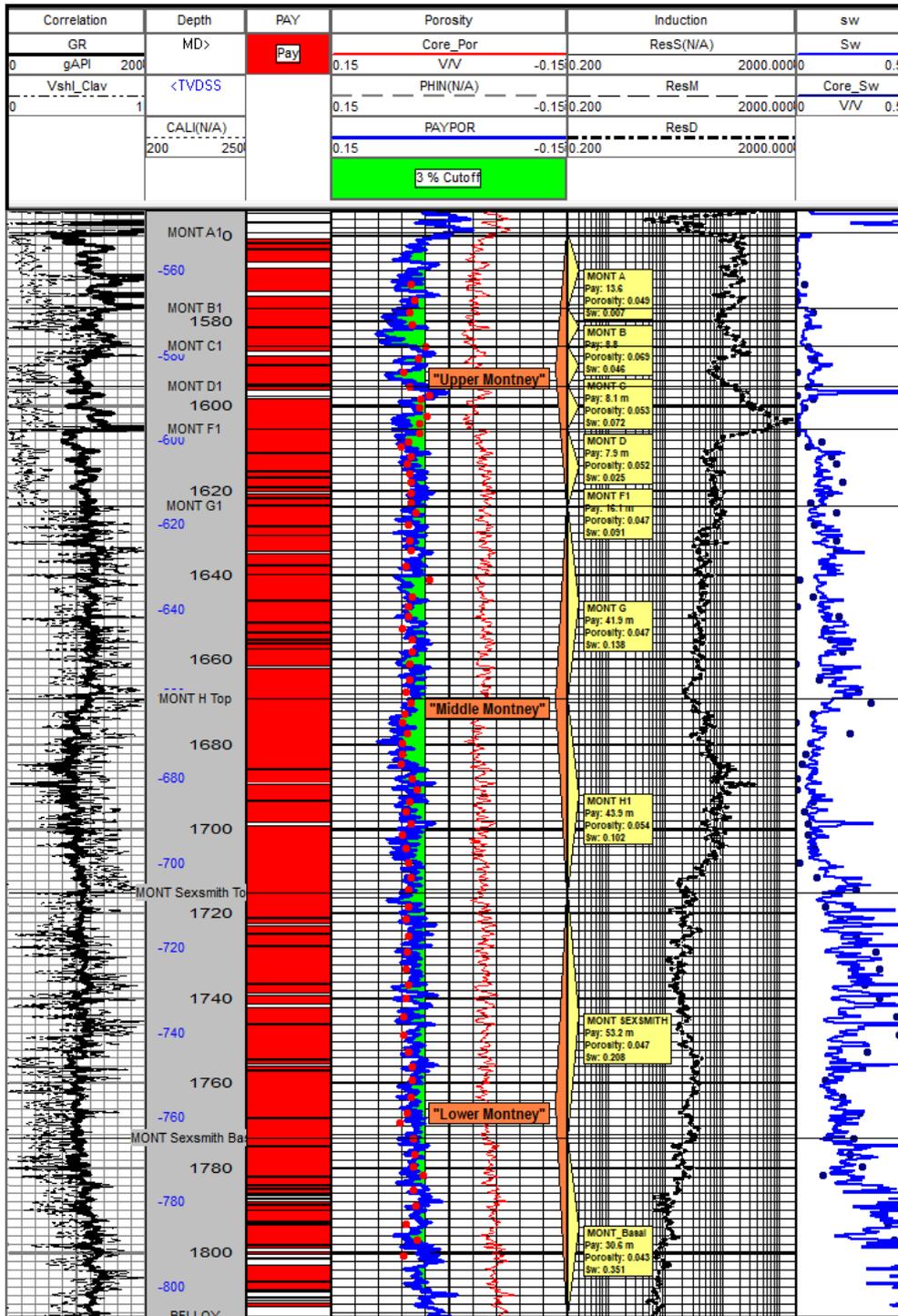


Figure 2 - The calculated net pay, porosity and water saturation are shown on the 200/a-054-C/094-G-09 type log along with stratigraphic zones and tops. Core porosity and Core Sw are denoted by the red and blue dots, respectively.





**Original Gas in-Place and Reservoir Parameters**

Nine 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 nine individual zones. The resulting gas in-place was then combined to calculate the gas in-place for the Upper and Middle Montney.

**Resource Estimates**

Type curve analysis was performed on Montney Upper, Middle and Lower zones using nearby analogs in the Tommy Lakes Area. In recent years, average well length has increased from approximately 1,900 metres to 2,500 metres, while proppant loading has increased from an average of 1 to 1.3 tons per metre.

On a normalized per 100 metre basis, analogous wells look capable of recovering anywhere from 0.2 to 0.4 Bcf. There appears to be no notable deterioration with EUR per 100 metre with the increasing lateral length. An analysis of various completion methods on the analogous wells showed that while there may be some relationships between various completion methods and EUR, none seemed to stand out as obvious performance drivers. Alternatively, there did seem to be an obvious correlation between OGIP and well performance.

Based on regional analogs CGR for the Montney Upper and Middle type curves has been forecast at 17.5 bbl/MMcf and 22.5 bbl/MMcf. respectively. The few Montney Lower wells have produced at relatively low CGRs and hence have been assigned an overall CGR of 12.5 bbl/MMcf. Resulting type curve parameters are shown in Table 4.

Type Well	HZ Length (m)	Crude Oil					Gas				
		IP(Inst) (bbl/d)	Tech EUR (Mbbbl)	IP/100m (bbl/d)	EUR/100m (Mbbbl)	Life OGR (bbl/MMcf)	IP(Inst) (mo/d)	Tech EUR (MMcf)	IP/100m (mo/d)	EUR/100m (MMcf)	Life OGR (cof/bbl)
MONT Upper	3,000	100	147	3	5	17.5	6,000	8,400	200	280	57,000
MONT Middle	3,000	128	189	4	6	22.5	6,000	8,400	200	280	44,000
MONT Lower	3,000	38	45	1	2	12.5	3,000	3,600	100	120	80,000

**Table 4 - Montney Type Well parameters**

In the Upper and Middle Montney, a ring fence for contingent resources was determined within the Company lands based on a three-mile radius from their first two horizontal drills. The remainder of Company lands was considered a part of the prospective resources ring fence.

As production has yet to be proven for the Lower Montney, the entirety of the Company lands has been considered prospective resources only. An aerial exploitation factor of 80 percent was applied to the Montney Upper and Middle zones, and 70 percent to the Montney Lower Zone. 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



removal of areas with higher water saturation or lower GIIP that have yet to be fully resolved pending additional well control.

Well counts were determined by taking the ring fences from the above method and dividing by the average drainage area for 350 metre well spacing and 3,000 metre well length. Well spacing within the Montney resource in British Columbia commonly ranges between 300 metres to 400 metres depending on GIIP 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. Saguario's corporate presentation has indicated plans to pursue lateral lengths of 2,500 metre going forward.

### ***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 who is a consultant (Havoc Services Pty Ltd) contracted to Calima Energy. 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 owns and operates 63,103 acres of drilling and production rights for the Montney Formation in British Columbia ("Calima Lands").



## Oil and Gas Glossary

B	Prefix – Billions	bbl	Barrel of oil
MM or mm	Prefix – Millions	boe	Barrel of oil equivalent (1 bbl = 6 mscf)
M or m	Prefix – Thousands	scf	Standard cubic feet
/ d	Suffix – per day	Bcf	Billion cubic feet
EUR	Estimated Ultimate recovery	C	Contingent Resources – 1C/2C/3C – low/most likely/high
WI	Working Interest	NRI	Net Revenue Interest (after royalty)
PDP	Proved Developed Producing	1P	Proved reserves
PUD	Proved Undeveloped Producing	2P	Proved plus Probable reserves
IP24	The peak oil rate over 24 hrs	3P	Proved plus Probable plus Possible reserves
g	gas	o	oil