

## Overview of Block 9 PSC, Onshore Cuba

**World class exploration block with large footprint in proven hydrocarbon system, on trend with the giant Varadero oil field**

The Cuba Block 9 Production Sharing Contract (“Block 9 PSC”), is a large area of 2,344km<sup>2</sup> onshore on the north coast of Cuba, 140 km east of Havana in a proven hydrocarbon system and along trend with the multi-billion barrel Varadero oil field.



Figure 1. Block 9 location map showing adjacent fields.

Block 9 has multiple other producing fields within close proximity, including the Majaguillar and San Anton fields immediately adjacent to Block 9 in addition to the Motembo field, the first oil field discovered in Cuba. Melbana Energy is prequalified as an onshore and shallow water operator in Cuba and was awarded a 100% interest in the Block 9 PSC on 3<sup>rd</sup> September, 2015. Melbana’s established position in Cuba provides it a strong early mover advantage.

## Cuba – Open for business

In 2014 the Cuban Government passed the Foreign Investment Act encouraging new investment in Cuba, including setting a corporate tax rate between 15% and 22.5% with a corporate tax holiday for the first eight years. There are multiple modern land drilling rigs currently operating in Cuba. Block 9 consists largely of low-lying farm land and there are sealed roads that connect Block 9 to Havana. A deep water port with an oil terminal is within 75km and international airport within ~40km.

Cuba currently produces approximately 45,000 barrels per day of oil and 3 million cubic metres of gas. Oil production meets 50% of the domestic consumption, with the balance satisfied by imports. The majority of the oil industry is currently operated by the national oil company, CUPET, and there is only one western company, Sherritt International from Canada, currently producing oil in Cuba.

**Independent Expert McDaniel & Associates best estimate of Block 9 potential Oil-In-Place is 15.7 billion barrels<sup>1,2</sup> and best estimate of Block 9 prospective resource is 718 million barrels of oil<sup>1,2</sup>**

## Block 9 PSC Highlights:

- 15.7 billion barrels of Oil-in-Place with recoverable Prospective Resources of 718 million barrels (Best Estimate) as per Independent Expert McDaniel & Associates Report<sup>1,2</sup>.
- 3 prospects, 16 individual leads identified
- Block 9 is a low cost onshore PSC with a number of prior oil discoveries reducing exploration risk and with the opportunity to turn discoveries into production faster than an offshore development
- Drilling program to explore high potential targets

<sup>1</sup> see Cautionary Statement on Prospective Resources on page 3

<sup>2</sup> Independent Expert McDaniel & Associates Competent Persons Report June 30, 2018

### Prospectivity Assessment of Block 9

Melbana's technical personnel have significant global experience in analogous geology and petroleum systems to Cuba. Their technical assessment has identified the following three play types in Block 9:

1. Lower Sheet Play (approximately 2,000 – 3,500 metres depth);
2. Upper Sheet Play (approximately 800-3,000 metres depth); and
3. Shallow Tertiary Play (approximately 400-1,200 metres depth).

A key aspect of Melbana's technical review of Block 9 is the development of Melbana's new integrated seismic interpretation methodology. This methodology is a new predictive structural/stratigraphic geoscientific approach resulting in a subsurface model that can be applied broadly across a wide range of complex settings, including Block 9. New knowledge acquired through the Block 9 research has been instrumental in Melbana building a more comprehensive integrated seismic interpretation methodology. Technical development includes but is not limited to: preparation of relevant data sets, integration of seismic interpretation based on: stress and driving forces on plate tectonic and kinematic models, outcrop and well data, biostratigraphy, gravity and velocity data.

**3 prospects and  
16 leads  
identified in  
Block 9**

The Lower Sheet Play, which is a conventional, fractured carbonate reservoir, similar to existing producing fields in Cuba, and is located at depths typically between 2,000 and 3,500 metres. In offsetting Cuban fields, these reservoirs can be highly productive, with reported initial well rates of up to 4,000 barrels of oil per day.

Oil recoveries to date suggest that the Lower Sheet Play has potential for higher quality crude oil than that produced from adjacent fields. It has demonstrated prospectivity in the western and central areas of Block 9 and is likely to be prospective in the east of Block 9, where an absence of seismic data limits the assessment.

Melbana's technical assessment has identified a total of 19 structural prospects and leads which the company has been prioritizing to focus on the highest impact, lowest risk drill opportunities (see Figure 2).

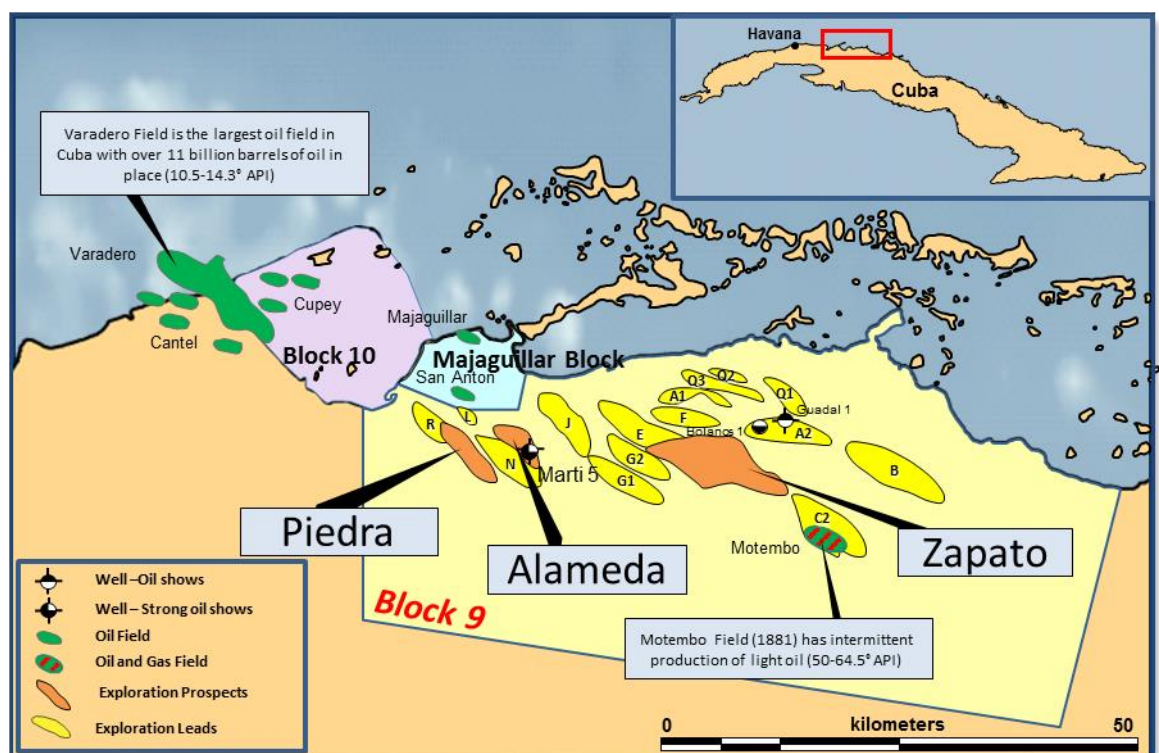


Figure 2. Block 9 PSC with high graded drilling targets

Melbana recently engaged McDaniel & Associate Consultants, an independent expert with over 20 year's Cuban experience<sup>3</sup>, to assess the prospective resources available in Block 9. Their best estimate total Oil-In-Place is 15.7 billion barrels (see Table 1), with the best estimate total exploration Prospective Resource of 718 million barrels of oil<sup>1,2</sup> (See Table 2).

The recoverable volumes have been conservatively estimated using the historical recovery factor for nearby Cuban fields. Due to the large amount of potential Oil-In-Place, the use of modern enhanced oil recovery techniques that improve the recovery factor offers the further potential for a substantial increase in oil recovery.

Additional potential is anticipated in the Upper Sheet and Tertiary plays, however these have not been quantified at this stage. There are numerous oil recoveries from old wells in the Upper Sheet in Block 9 and production from this play in nearby fields. The Tertiary play is likely to contain heavier oil, and more data is needed to establish its level of productivity before it can be adequately characterised. Melbana is optimizing the potential drilling program to enable the acquisition of valuable information about both plays during the drilling of wells to the Lower Sheet objectives.

*Independent Expert McDaniel & Associates best estimate of Block 9 potential Oil-In-Place is 15.7 billion barrels<sup>1,2</sup>*

**Table 1 – Extract McDaniel Report<sup>1,2</sup> – Block 9 Potential Oil in Place**

Melbana Energy Ltd. Cuba and Australia Resources Summary of Total Petroleum Initially in Place - Property Gross Values Effective June 30, 2018						
Prospective Resources - Total BOE(6)			Total Petroleum Initially in Place			
Prospect/Lead	Working Interest	Maturity	Low (P90)	P50	Mean	High (P10)
			MMboe	MMboe	MMboe	MMboe
<b>Cuba</b>						
Alameda		Prospect	956	1,555	1,674	2,561
A1		Lead	119	233	265	448
A2		Lead	562	1,106	1,258	2,149
B		Lead	1,401	2,779	3,126	5,334
Zapato		Prospect	1,080	2,098	2,393	4,090
C2		Lead	772	1,526	1,743	2,982
E		Lead	179	347	395	675
F		Lead	380	750	854	1,486
G1		Lead	297	569	655	1,124
G2		Lead	246	476	547	941
J		Lead	514	1,014	1,146	1,980
L		Lead	31	62	69	119
N		Lead	97	190	216	370
Piedra		Prospect	378	743	841	1,442
Q1		Lead	167	331	375	649
Q2		Lead	38	76	86	147
Q3		Lead	98	193	221	383
R		Lead	210	407	466	807
U1		Lead	658	1,307	1,495	2,564
<b>Sub-Total</b>			<b>8,185</b>	<b>15,763</b>	<b>17,825</b>	<b>30,250</b>

<sup>1</sup>Independent Expert McDaniel & Associates Competent Persons Report June 30, 2018

<sup>2</sup>Prospective Resources Cautionary Statement: The estimated quantities of petroleum that may potentially be recovered by the application of a future development project(s) relate to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Future exploration appraisal and evaluation is required to determine the existence of a significant quantity of potentially moveable hydrocarbons.

Table 2 – Extract McDaniel Report<sup>1,2</sup> – Block 9 Prospective Resource Estimates

Melbana Energy Ltd.  
Cuba and Australia Resources  
Summary of Prospective Resources Estimates - Property Gross Values  
Effective June 30, 2018

Table 1c

Prospective Resources - Total BOE(6)		Prospective Resources - Unrisked (1) (2)				Chance of Discovery %	Risked Resources Mean (2) MMboe
Prospect/Lead	Working Interest Maturity	Low (P90) MMboe	P50 MMboe	Mean MMboe	High (P10) MMboe		
<b>Cuba</b>							
Alameda	Prospect	39	72	79	128	32%	25
A1	Lead	4	11	13	23	12%	2
A2	Lead	21	50	60	112	12%	7
B	Lead	52	126	148	270	12%	18
Zapato	Prospect	38	95	114	214	23%	26
C2	Lead	29	70	84	153	16%	14
E	Lead	7	16	19	35	16%	3
F	Lead	14	34	41	76	15%	6
G1	Lead	11	26	31	58	16%	5
G2	Lead	9	22	26	49	16%	4
J	Lead	19	45	54	100	23%	12
L	Lead	1	3	3	6	23%	1
N	Lead	4	9	10	19	23%	2
Piedra	Prospect	14	34	40	76	23%	9
Q1	Lead	6	15	18	33	12%	2
Q2	Lead	1	3	4	8	12%	0
Q3	Lead	4	9	11	20	12%	1
R	Lead	8	18	22	42	23%	5
U1	Lead	24	60	71	132	15%	11
<b>Sub-Total</b>		<b>305</b>	<b>718</b>	<b>848</b>	<b>1,553</b>		<b>153</b>

**Use of modern enhanced oil recovery techniques offers substantial potential for further increases in oil recovery**

<sup>1</sup>Independent Expert McDaniel & Associates Competent Persons Report June 30, 2018

<sup>2</sup>Prospective Resources Cautionary Statement: The estimated quantities of petroleum that may potentially be recovered by the application of a future development project(s) relate to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Future exploration appraisal and evaluation is required to determine the existence of a significant quantity of potentially moveable hydrocarbons.

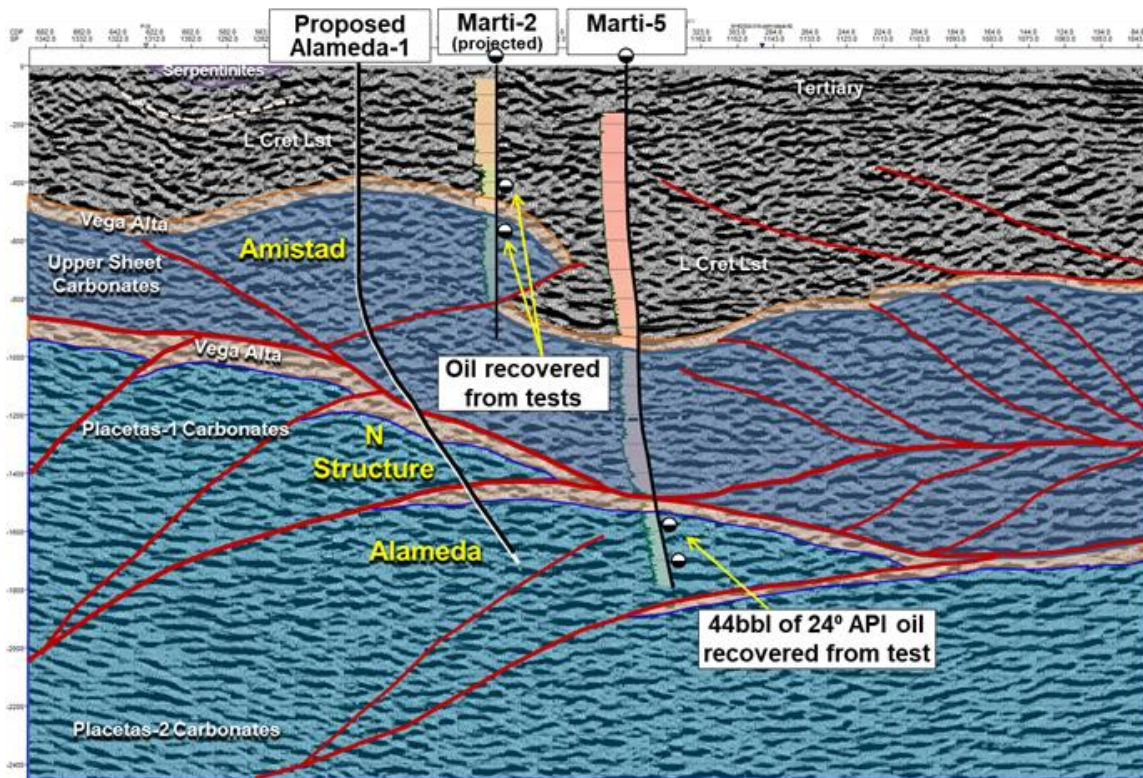
### Alameda Prospect - highest ranked prospect in Block 9

The Alameda Prospect is currently the highest ranked exploration target in Block 9 PSC. Alameda is a large structure located in the western part of Block 9 and is in a similar structural position to the Varadero field, the largest oil field in Cuba, approximately 35km away.

The proposed Alameda-1 well which will test a combined exploration potential of over 3 billion barrels Oil-in-Place and 279 million recoverable barrels of oil aggregate high side potential<sup>1,2</sup> (Tables 3 & 4).

The primary objective at Alameda ranges in depth from approximately 3,000 to 3,700 meters. The presence of oil in the Alameda structure is supported by the Marti-5 well drilled within the prospect closure in a down flank position nearly 30 years ago and which recovered 24° API oil and had numerous oil shows extending over a 850 metre gross interval from the Lower Sheet section (see Figure 3).





**Alameda Prospect is highest ranked prospect, supported by recoveries from two old wells**

**Figure 3. Schematic cross section for proposed Alameda-1 well**

The Alameda exploration well has been designed as a mildly deviated well, with a total measured depth of 4,000m to enable the well to penetrate three independent exploration objectives; the primary Alameda objective as well as the shallower N and Amistad/U1 objectives.

While characterised as an exploration well, the chance of success at Alameda-1 benefits from two old wells, Marti-2 and Marti-5, both of which recovered oil from Amistad/ U1 and Alameda objectives respectively. The Amistad/U1 objective is a structure indicated on seismic as being updip of the tested oil recoveries in the Marti-2 well. Alameda-1 is estimated to take approximately 80 days to drill. In the event of a discovery at Alameda there would be significant follow up potential, with a number of additional prospects and leads in close proximity.

**Independent Expert McDaniel & Associates estimates Alameda prospective resource potential as up to 279 million barrels of oil<sup>1,2</sup>**

Objective	Chance of Success	Recoverable Prospective Resource (MMboe) <sup>1,2</sup>			
	%	Low	Best	High	Mean
<b>Amistad/U1</b>	15%	24	60	132	71
<b>N</b>	23%	4	9	19	10
<b>Alameda</b>	32%	39	72	128	79

**Table 3: Exploration Prospective Recoverable Resource estimates for objectives of Alameda-1 well**

<sup>1</sup>Independent Expert McDaniel & Associates Competent Persons Report June 30, 2018

<sup>2</sup>Prospective Resources Cautionary Statement: The estimated quantities of petroleum that may potentially be recovered by the application of a future development project(s) relate to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Future exploration appraisal and evaluation is required to determine the existence of a significant quantity of potentially moveable hydrocarbons.

### Zapato Prospects – High Priority Exploration Drill Opportunities

The proposed Zapato-1 well location is in the central portion of Block 9 and is designed to test a Lower Sheet closure in close proximity to the shallower Motembo oil field, which has historically produced a high quality light oil. The Zapato feature has a crest at approximately 2,000 metres and is a robust structure with nearly 1,000 metres of vertical relief.

Block 9 has high quality detailed pre-existing gravity and magnetic data sets. In the type of geology present in Cuba it is common to use a combination of seismic, magnetic and gravity data sets to define prospectivity.

Recently completed gravity and magnetic study commissioned by Melbana and undertaken by Cuba's specialist technical laboratory CEINPET over the Zapato prospect has indicated a strong gravity and magnetic alignment with the structural interpretation Melbana's technical team derived from seismic and surface data. This result is supportive of Melbana's assessment of the prospectivity of Zapato as a large carbonate duplex structure along strike from the Motembo discovery which produced light 56°API oil.

Carbonate duplex structures such as Zapato are being targeted by Melbana due to their potential to contain Varadero style oil accumulations and are able to be identified using this technique by their combined gravity and magnetic response which differentiates them from low prospectivity intervals.

*Independent Expert McDaniel & Associates estimates Zapato prospective resource potential as up to 214 million barrels of oil<sup>1,2</sup>*

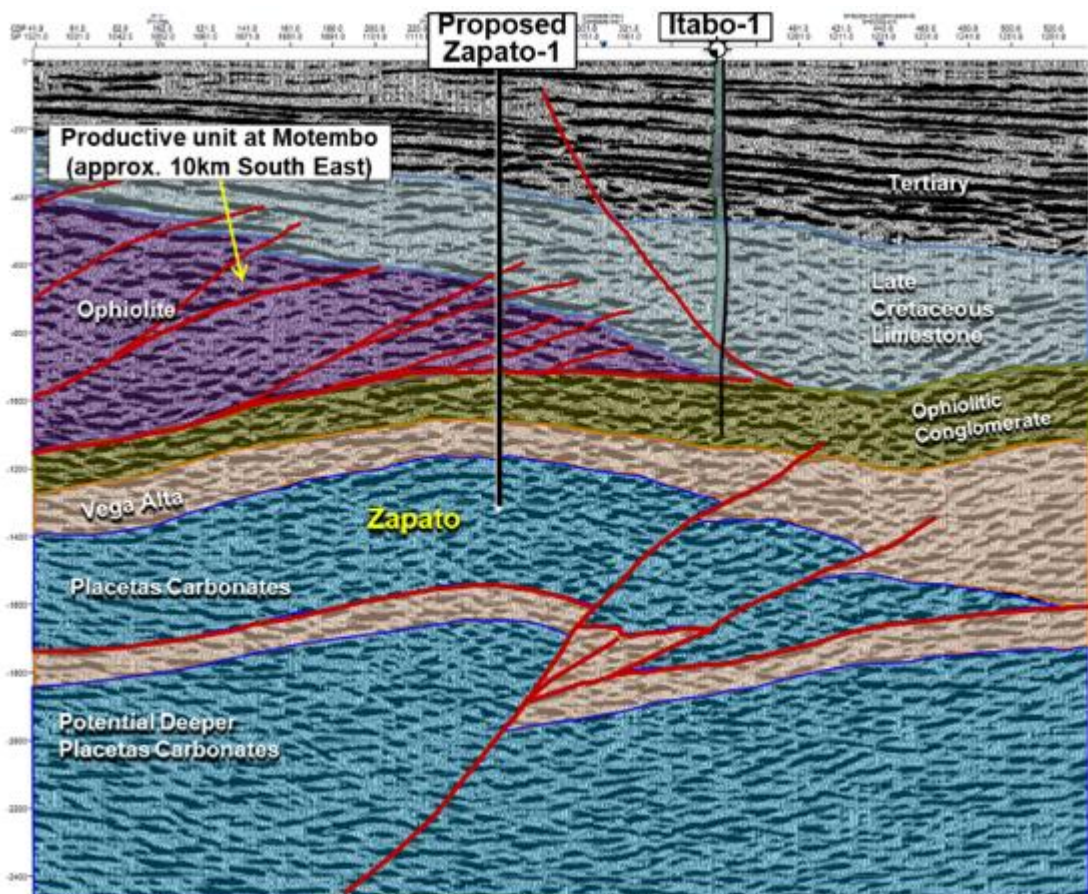


Figure 4. Schematic cross section through Zapato Prospect



	Chance of Success	Recoverable Prospective Resource (MMboe) <sup>1,2</sup>			
	%	Low	Best	High	Mean
<b>Zapato</b>	23%	38	95	214	114

**Table 4: Exploration Prospective Recoverable Resource estimates for Zapato**

<sup>1</sup>Independent Expert McDaniel & Associates Competent Persons Report June 30, 2018

<sup>2</sup>Prospective Resources Cautionary Statement: The estimated quantities of petroleum that may potentially be recovered by the application of a future development project(s) relate to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Future exploration appraisal and evaluation is required to determine the existence of a significant quantity of potentially moveable hydrocarbons.

### Cuba Drilling Program

Melbana is proceeding with detailed planning for a drilling campaign in Block 9 and has undertaken field work and is proceeding with the permitting process to support drilling the Alameda-1 and Zapato exploration wells. A two well campaign drilling these two wells is estimated to cost in the range of US\$20-35m.

### Contact Details

Melbana Energy Limited  
L3, 350 Collins St  
Melbourne, Victoria, Australia  
Email: [admin@melbana.com](mailto:admin@melbana.com)  
Phone: +61 3 8625 6000

### Notes

**Contingent and Prospective Resources:** Unless otherwise specified, the information that relates to Contingent Resources and Prospective Resources for Melbana is based on, and fairly represents, information and supporting documentation compiled by Mr. Dean Johnstone, who is an employee of the company and has more than 34 years of relevant experience. Mr. Johnstone is a member of the American Association of Petroleum Geologists. Mr. Johnstone consents to the publication of the resource assessments contained herein. The Contingent Resource and Prospective Resource estimates are consistent with the definitions of hydrocarbon resources that appear in the Listing Rules. Conversion factors: 6 Bscf gas equals 1 MMboe; 1 bbl condensate equals 1 boe; "MMstb" means million stock tank barrels of oil.