minelife

RESOURCE BULLETIN by Gavin Wendt

Wednesday 3rd November, 2021

Portfolio Stock Developments

Melbana Energy - (ASX: MAY, Share Price: $0.025, Market Cap: $72m, coverage initiated @ $0.02 in Sep 2021 – *current gain of 25%*)

Key Catalyst

Remedial works completed on Alameda-1 exploration well in Cuba, preparations being made for pressure and integrity testing, drilling then to resume to target deeper primary targets.

MAY is an upstream oil and gas exploration company, with projects located in both Cuba and Australia. We recently introduced MAY to our coverage universe, based on a restructuring of the company's financial position with the raising of $7.1 million via a right issue that was fully underwritten, and a rejuvenation of the company's oil exploration program that has seen the commencement of drilling within the Block 9 PSC, onshore Cuba. Block 9 is a large onshore acreage (2.1% of Cuba's total area) located on the north coast of Cuba, 140km east of Havana. The first well in the company's current two-well drilling program is the Alameda-1 well, which commenced drilling on 13 September and will evaluate three separate targets with a combined 'best-estimate' prospective resource of 141 million barrels of oil. MAY benefits from being carried for 85% of the total well drilling program costs, but holding a 30% stake.

Current Activity

Alameda-1 Well Update

MAY has provided an update with regard to the progress of its Alameda-1 well, which is located within PSC Block 9 in onshore Cuba.

Overview

Drilling progress with respect to the company's Alameda-1 well has been halted over recent weeks, as the company has had to address issues with respect to the drill-hole itself. These issues are not serious, and are not atypical in terms of oil exploration well drilling, but they have meant that drilling progress has been impacted temporarily.

This has also possibly had somewhat of an impact on MAY's recent share price performance, which has retraced from a recent high of $0.03 to a current price around $0.025.

Encouragingly, MAY has reported that it has completed remedial works relating to the setting of the liner within the Alameda-1 well. Drilling operations within the well have been delayed due to the lead section of the cement injected to secure the liner not setting to a satisfactory standard. The cement plug that was injected has now been drilled out to 1,821 metres and will continue to 1,842 metres once the higher density mud has displaced the well. Drilling ahead to the deeper targets that are of primary interest in the well will then continue, following a successful formation integrity test and pressure test of the blow-out preventer.

Given the increase in pressure detected at 1,800 metres, it was important that these remedial works were completed to the standard required by the well design before drilling forward (blow-outs are possible on oil & gas drilling rigs, with potentially disastrous and fatal consequences, i.e. BP's Deepwater Horizon rig blow-out in the Gulf of Mexico during 2010 was an extreme example). In parallel to undertaking these works, an additional mud gas separator was installed to give the rig enhanced capacity.

Analysis of a previously collected oil sample from the Alameda-1 well reported an API of 15°, lighter than the nearby Varadero field (reportedly 10 – 14° API). Sampling conditions were not optimum, however, and better samples will be attempted to be collected and reanalysed at the next opportunity. Oil of this specific gravity is common in Cuba and typically free flowing.

MAY has also commenced mapping to characterise the resource potential of the unexpected hydrocarbon zones encountered so far. As previously reported, it is estimated wireline logs indicate ~48 metres of net pay across 11 zones totalling 415 metres of gross section (but excluding ~290 metres that could not be analysed due to poor well conditions, but within which good oil shows were also encountered). The net pay total was derived using a conservative porosity cut-off of 12%. This makes no allowance for the presence of fracturing, however, which would increase this net pay estimate to ~100 metres by lowering the porosity cut-off in the calculation.

Technical Significance

From a market and share price perspective, it is welcome that the technical issues with respect to the Alameda-1 well have been resolved, allowing drilling to recommence towards the deeper primary objectives within the well.

These sorts of technical issues, no matter how routine or common, inevitably end up impacting an company's share price to some degree (albeit temporarily), perhaps because there are some investors don't properly understand the nature of exploration and what's involved.

The 15° API that's been identified so far compares with the nearby multi-billion barrel Varadero field (reportedly 10 – 14° API). The collected oil samples within the Alameda-1 well suggest a lighter oil than the heavy oil which often occurs in shallow horizons in the northern parts of Cuba. This is also a very encouraging sign and we await the analysis of that oil with interest.

A crude oil will typically have an API between 15 and 45 degrees and a higher API indicates a lighter (lower density) crude. Lower API indicates a heavier (denser) crude. Generally, lighter (higher API) crudes are more valuable because they yield more high-value light products when run through a refinery. The nature of the crude oil in Cuba is that it tends to be a heavier, lower API crude, but the country's refining facilities are geared up for this.

What's a bonus in the Alameda-1 well so far are the unexpected hydrocarbon zones so far encountered at relatively shallow depths within the well, which were not anticipated prior to drilling. These zones will be tested and assessed for their possible commercial potential once the well is fully-drilled, but in the meantime, MAY has commenced mapping to characterise the resource potential of these shallower zones.

As previously reported, it is estimated wireline logs indicate ~48 metres of net pay across 11 zones totalling 415 metres of gross section (but excluding ~290 metres that could not be analysed due to poor well conditions, but within which good oil shows were also encountered). The net pay total was derived using a conservative porosity cut-off of 12%. This makes no allowance for the presence of fracturing, however, which would increase this net pay estimate to ~100 metres by lowering the porosity cut-off in the calculation.

What's encouraging from my perspective are the comments from MAY management, in particular "increasing optimism to the extent that we consider that the Alameda 1 has made a discovery in the upper secondary objective. While determining the commerciality of the discovery will require future drilling, we are very encouraged for the prospects of the deeper primary targets in this well, as well as for our overall Block 9 drilling portfolio to which we expect to add new upper-sheet prospects (which could be drilled at relatively low cost)." The company's geoscience team is continuing to geologically re-map the upper horizons to determine estimates of volumes of hydrocarbons in the pay zones identified to date.

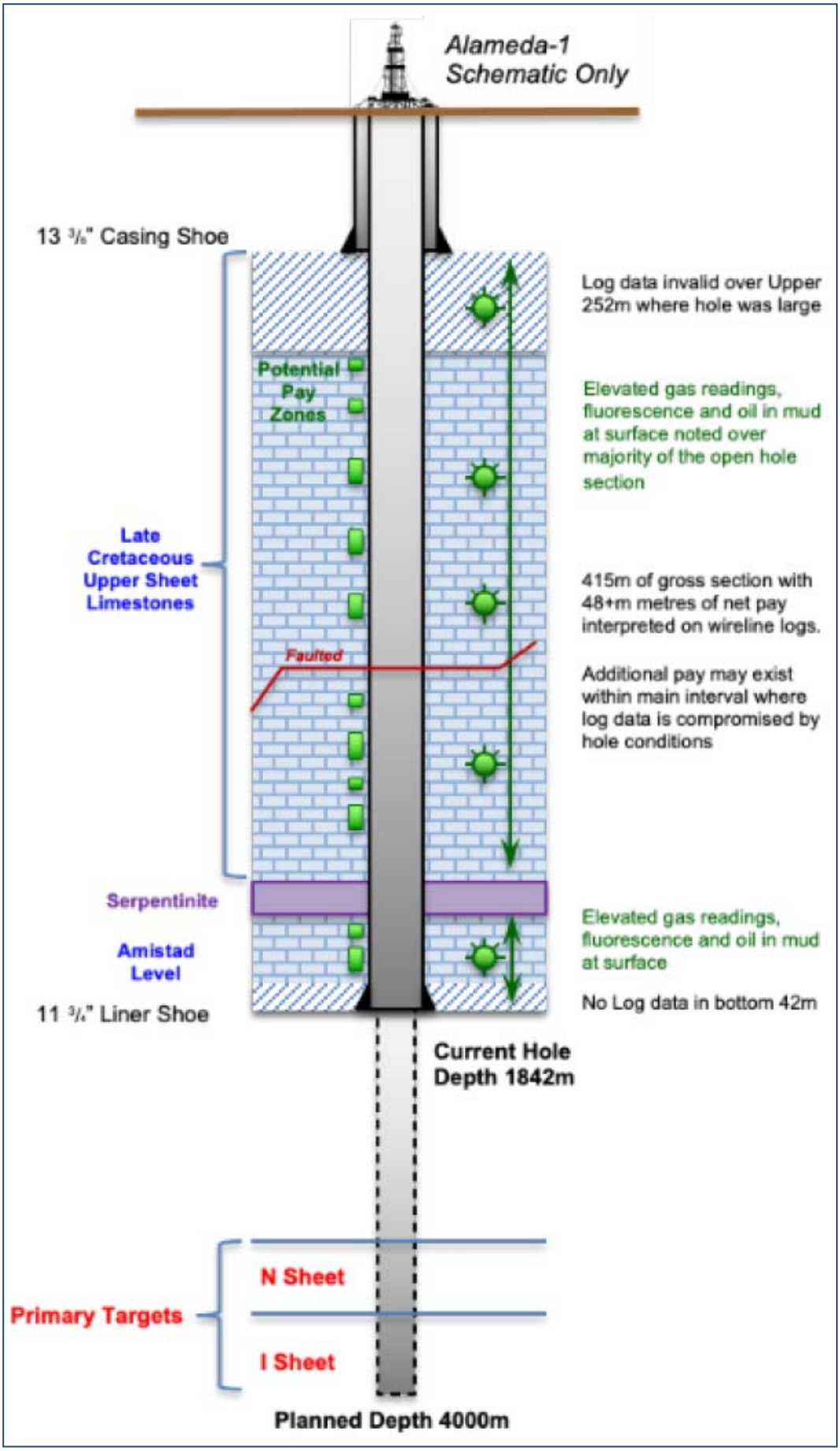


Figure 1: Overview of the status of the Alameda-1 well

Project Overview

Block 9 is a large onshore PSC acreage (2.1% of Cuba's total area) located on the northern coast of Cuba, 140km east of Havana. Block 9 has an already-proven hydrocarbon system, with previous historic exploration wells indicating the presence of hydrocarbons. The block is also supported by being along the trend line from the multi-billion barrel Varadero oil field, located just 35km away. A key feature of the Varadero field is the major fold and thrust belt structures that fracture and fold carbonate units, which is interpreted to extend into Block 9.

Block 9 has been independently assessed to house 15.7 billion barrels of oil (nearly a trillion dollars' worth), with prospective resources of 718 million barrels. These estimates are based upon pre-existing seismic, gravity, magnetic and surface data sets. There is the potential for MAY to expand its resource estimates as the company is expected to shoot new seismic lines on the additional 19 structural leads identified.

Block 9 consists largely of low-lying farm land with sealed roads that connect Block 9 all the way to Havana. Extensive oil and gas infrastructure surrounds Block 9, with a deep-water port housing an oil terminal located 75km away and the second largest international airport within 40km.

Alameda Prospect

Prior to the drilling activity being halted, the rig was drilling ahead in limestone and clastic sediments within the Upper Thrust Sheet. Encouraging hydrocarbon shows (described as good by MAY's personnel on site) were encountered just below the first casing point at 454 metres, when moveable oil was reported at surface within the mud and cuttings samples. The oil, which appears to be lighter than that normally seen at this depth, was accompanied by elevated gas readings.

Figure 2: Sunrise at the Alameda-1 drilling camp

Drilling continued through the shallow limestones and minor clastic sediments, with similar shows persisting over a gross interval of about 670 metres. This includes the interval of the anticipated “U1” secondary objective, through which excellent hydrocarbon shows were reported. Variable oil shows have continued to be encountered below this interval to the current depth of the well.

At this stage, the significance of these very encouraging shows is uncertain, but they will be evaluated when logs become available at the conclusion of the current hole section. Any further evaluation of deliverability and lateral extent of this new potential oil zone will be determined after the conclusion of drilling of the Alameda-1 well. Encountering oil shows over such a significant interval of 670 metres within the Alameda-1 well is very encouraging indeed – and is reflected in MAY’s solid share price appreciation since we initiated coverage @ $0.02 in September 2021.

The Alameda Prospect that’s currently being drill-tested contains three targets, U1, N and Amistad, which can all be tapped from just one slightly-deviated well. The most exciting prospect is the lower sheet target, Alameda, which is in a similar structural setting as the Veradero fields.

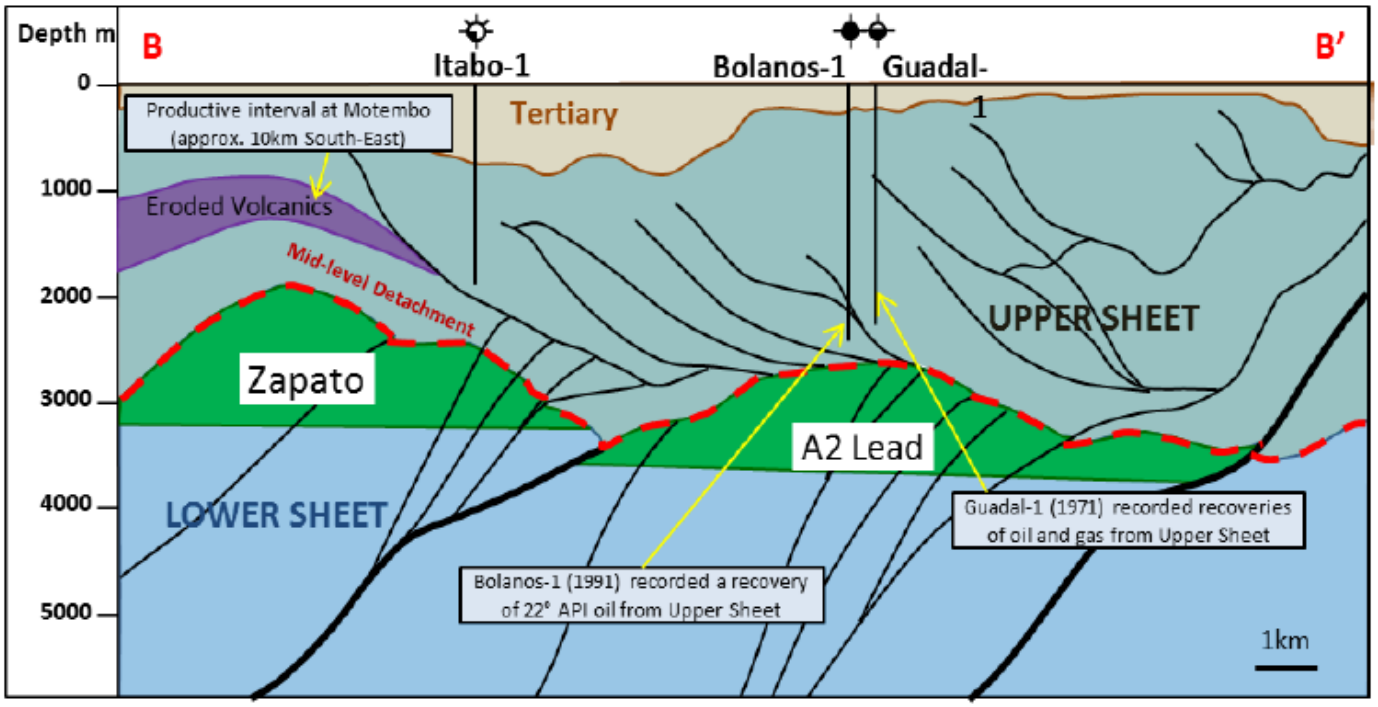


Figure 3: Schematic cross-section of the Alameda-1 well

The three targets are independently assessed to contain a prospective resource of 141 million barrels of oil. The Alameda-1 well is estimated to take a total of around 80 days to drill (it commenced on 13 September), suggesting completion during early to mid-December given recent delays. The chance of success for the three prospects is estimated to be 32% (which is high by industry standards) due to the supportive data from the previous exploration wells, Marti-2 and Marti-5. The Marti-5 well, drilled nearly 30 years ago, recovered 44bbl of 24° API oil (high value light oil) and had numerous oil shows extending over a 850m Lower Sheet section (where the Alameda prospect is located). The U1 target is the structure that has been identified as the up-dip of the tested oil recoveries in the Marti-2 well.

Alameda Prospective Resources (100%, MMstb)**					
Objective	CoS*	Low	Best	High	Mean
U1	15%	24	60	132	71
N	23%	4	9	20	11
Alameda	32%	39	72	128	79

It must be emphasised that the oil shows encountered at shallow depths in the Alameda-1 well have enhanced the prospectivity of other "Upper sheet" structures within the Block 9 PSC. We are encouraged for the company's chances of finding oil deeper in the well and will follow MAY's drilling progress closely as it progresses towards its deeper primary objectives.

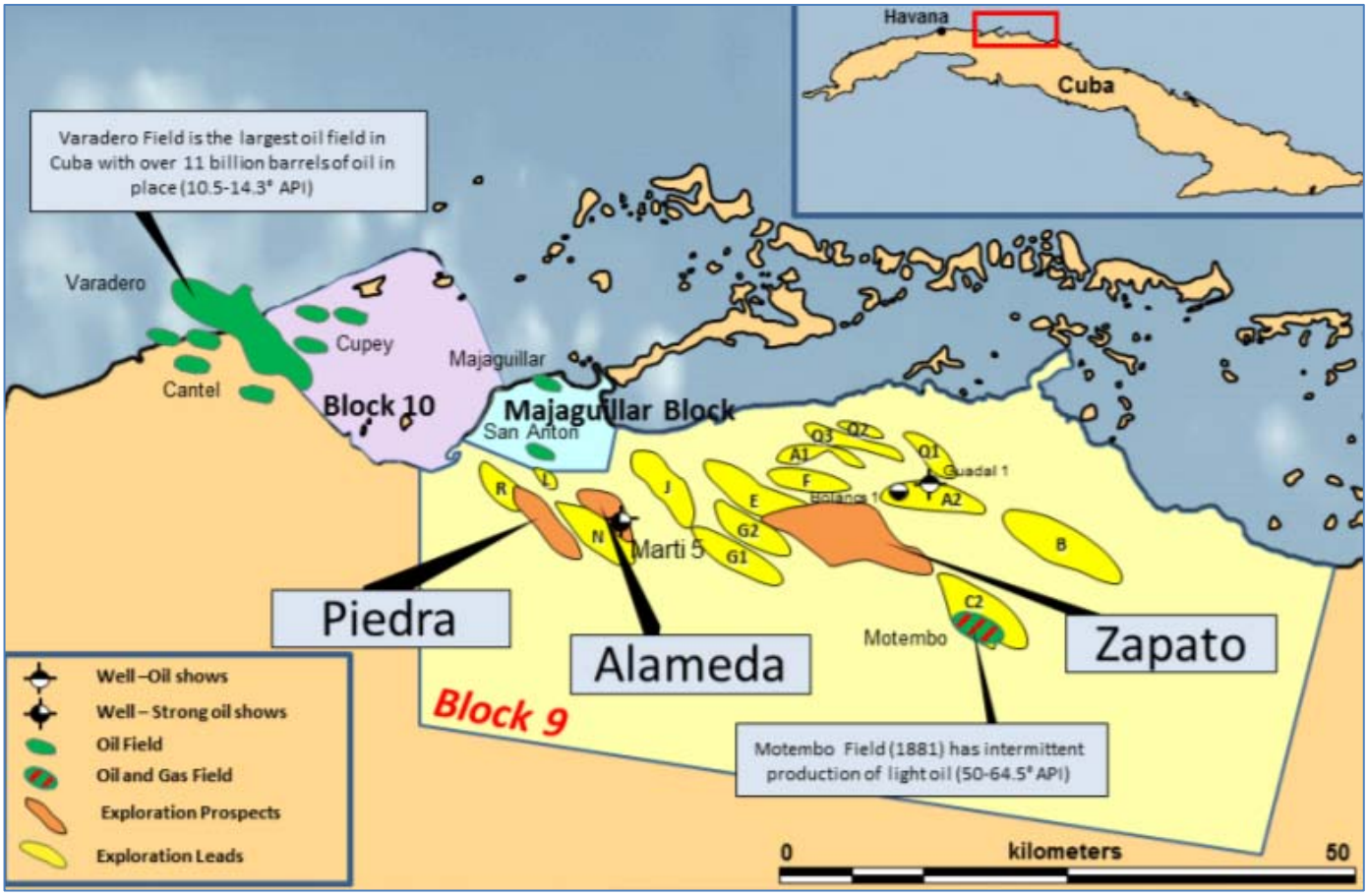


Figure 4: Location of MAY's drilling prospects within PSC Block 9, Cuba

Block 9 Agreements

During 2019, MAY entered into a farm-out agreement with Sonangol, Africa's second-largest oil producer, for Sonangol to acquire a 70% interest in Block 9. Based on the agreement, Sonangol will fund 85% of the two-well drilling programs, with MAY funding 15% of the well costs and remaining the operator until the completion of both drills.

MAY has additionally signed an offtake agreement with CUPET, Cuba's national oil company, that allows CUPET to purchase discovered oil at international prices. The agreement also allows MAY to sell the oil on the international markets. Cuba has multiple modern land drilling rigs currently operating in Cuba and MAY has selected Sherritt International as the drilling contractor.

Zapato Prospect

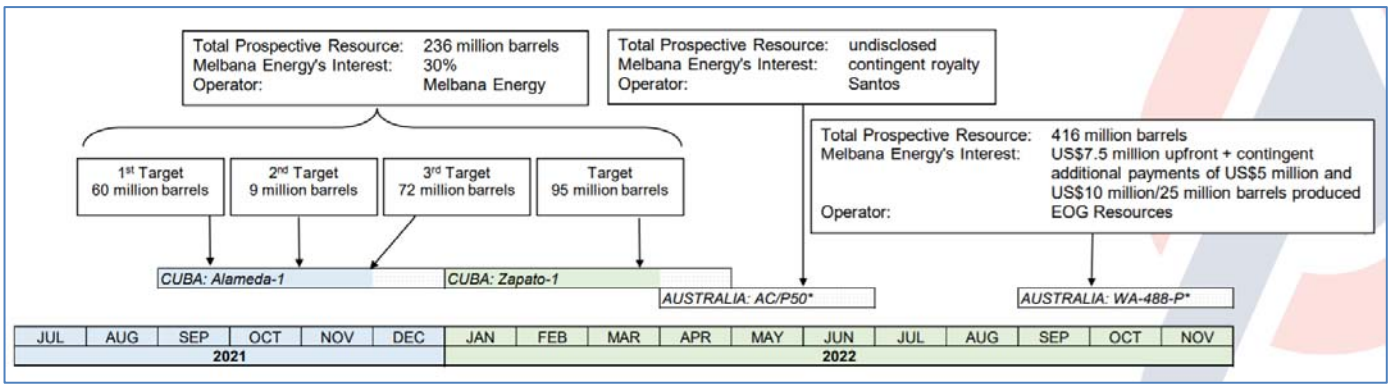
The Zapato prospect is being drilled immediately after the Alameda prospect, with construction of the well-pad currently underway and drilling commencement likely by the end of December. The prospect is independently assessed to contain 95 million barrels of oil and the chance of success is estimated at 23%.

The Zapato field is believed to be the source of the highly-productive Motembo oil field, which historically produced high-quality light oil. Studies have indicated there is a strong gravity and magnetic alignment of the structure, which is further supported by seismic and surface data. Carbonate duplex structures such as Zapato are being targeted due to their potential to contain Varadero style oil accumulations. The Zapato structural feature has a crest at approximately 2,000m, with a vertical relief of 1,000m.

Zapato Prospective Resource (100%, MMstb)**					
	CoS*	Low	Best	High	Mean
Zapato	23%	38	95	214	114

Timelines

The graphic below outlines the timing with respect to both of the company's exploration wells, Alameda-1 and Zapato-1, with activity from September 2021 through to March 2022.



Cuba Overview

Cuba is located within the Southern region of the Gulf of Mexico, which is currently one of the world's largest under-explored petroleum mega provinces. Cuba has been lightly explored with modern-day exploration technologies however the country does have a rich exploration history. The principal zone of exploration has occurred along the narrow belt in the north coast (where Block 9 sits) and in the regions immediately offshore where tectonically thickened Jurassic-Cretaceous carbonate sources and reservoir sections have formed a supercharged hydrocarbon system.

Current US trade embargoes are only imposed on American citizens, which limits their US engagements and operations in Cuba. Non-US international companies have been operating in Cuba with the most prominent being the Canadian company, Sherritt International, which has a rich 30-year oil and gas exploration and production history in Cuba, with blocks including the Varadero oil fields that is located next door to MAY's Block 9.

During 2019, Cuba produced just 45,000 barrels of oil equivalent per day, which only covered 50% of the nation's demand. This significant deficit has led Cuba to import most of its oil supply from Venezuela. Yet due to the economic and political instability in Venezuela over recent years, importation amounts have slowly been declining, placing a greater strain on the Cuban economy.

To attract more foreign investment into the country, the Cuban government during 2014 passed the Foreign Investment Act, which reduced tax rates and provided tax holidays for the first eight years of operations. As one of the first movers after the Act in 2015, MAY gained numerous advantages by securing the most attractive exploration blocks as well as establishing highly supportive relationships with the Cuban government and CUPET.

Oil Price Overview

Oil is now trading at its highest level since 2014, and strong oil demand is here to stay, even if prices continue to climb. And to show how resilient oil demand actually is, it is probable that oil prices would need prices to rise to $110 per barrel before there was an impact on demand big enough to balance the market deficit that is looming during Q1 2022.

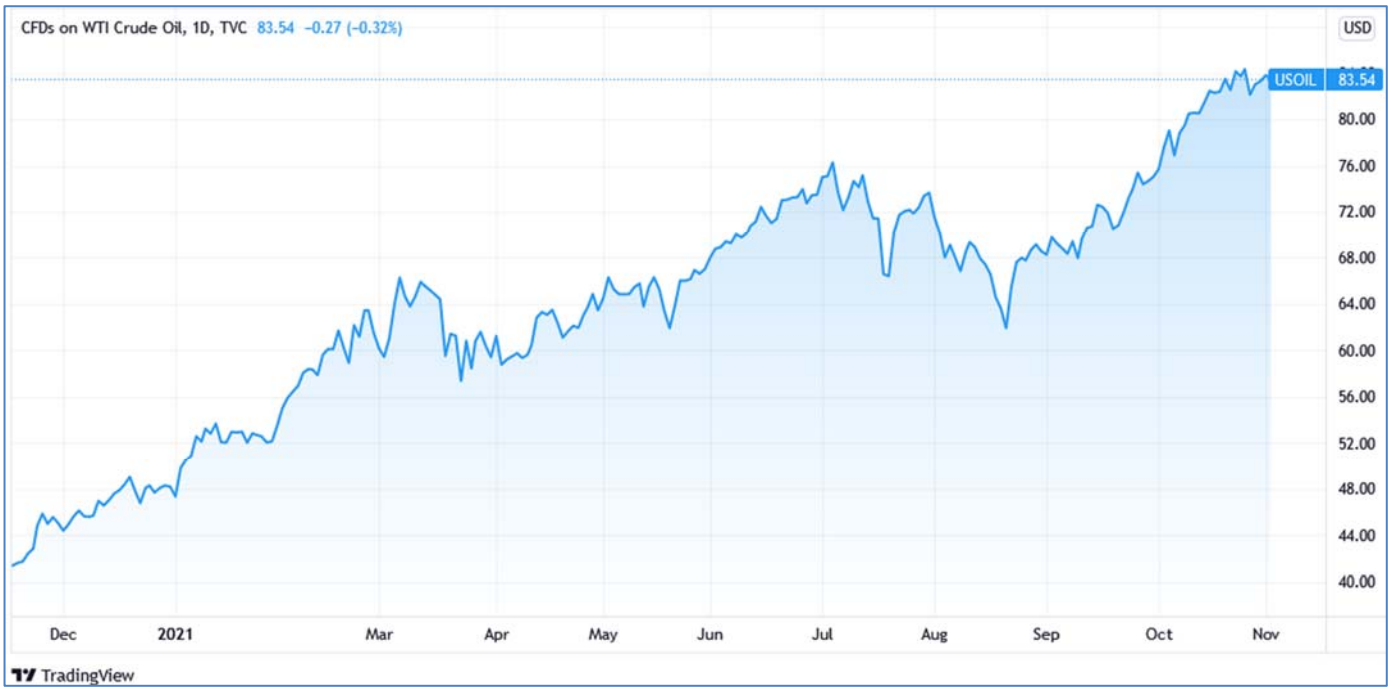
This is largely due to the fact that the enlarged OPEC+ is doing such a good job of maintaining supply-side discipline. The group has agreed to increase oil production into the market, but only at a rate of 400,000 bbls per month, when the market would ideally like more. This deal is set to last until at least April 2022. More broadly, OPEC is also facing question marks over its ability to meet its increased quotas, with supply constraints amongst key members including Libya, Nigeria and Angola, which is hampering its ability to ramp up output.

At the same time, the International Energy Agency (IEA) estimates that global oil demand will rise by 5.5 million barrels a day this year and by 3.3 million barrels per day in 2022. All this has left oil markets

vulnerable to price spikes. We're also seeing in the vicinity of a 1 million barrel per day increase in oil demand due to high gas prices, which are leading to substitution.

Oil prices above US$80 a barrel in the past have typically been the catalyst for a boom in US shale production, but not these days. The collapse in oil prices during early 2020 seems to have led to an exodus in funding for oil well development in the US, which has not fully recovered, as is perhaps unlikely to. This is reflected in forecasts for US shale production levels, which for 2022 are expected to reach 12.1 million barrels by the end of next year, up 440,000 barrels a day from the forecast for the end of 2021. This figure is substantially below US shale production's pre-pandemic record high of 13 million barrels a day during 2019.

Despite quite significant increase in oil prices, US shale operators have been quite prudent in their capital spending and have started building their strategies around high-return core assets. As a result, total rig count in the US has been quite sluggish in response to increase in WTI price and is still at 63% level compared to the number of rigs before the pandemic started.



Summary

We believe MAY is worth following based on the prospectivity of its current two-well oil drilling program in Block 9, Cuba. Block 9 has an already-proven hydrocarbon system, with previous historic exploration wells indicating the presence of hydrocarbons, and the results so far from Alameda-1 are very encouraging. Bear in mind too that the oil shows in the well so far are from the shallower zones, with the primary targets yet to be encountered. MAY will remain part of our coverage Portfolio as we follow its drilling and appraisal progress through until March 2022.

Disclaimer: Gavin Wendt, who is a director of Mine Life Pty Ltd ACN 140 028 799, compiled this document. It does not constitute investment advice. I wrote this article myself, it expresses my own opinions, and I am not receiving compensation for it. In preparing this article, no account was taken of the investment objectives, financial situation, and particular needs of any particular person. Investors need to consider, with or without the assistance of a securities adviser, whether the information is appropriate in light of the particular investment needs, objectives, and financial circumstances of the investor. Although the information contained in this publication has been obtained from sources considered and believed to be both reliable and accurate, no responsibility is accepted for any opinion expressed or for any error or omission in that information. Gavin Wendt holds shares in Melbana Energy (ASX: MAY).