

From an interview with Ruy Riavitz, Country Manager, in Petroquímica magazine. This has been translated from the original Spanish and can be found at

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## Madalena Ventures evaluates oil resources in Vaca Muerta

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### Conventional project also aims at training

*The company advances its strategy delineation within the formation. In the coming months, plans to drill wells to assess the feasibility of projects both "conventional" in naturally fractured shale as regional shale.*

**Madalena Ventures** (MVN) identified two types of enterprises in **Vaca Muerta** along its extensive surface: first, the major unconventional *shale* "more regional, if you will", and secondly, the possibility of developing projects where training is "naturally fractured", says **Ruy Riavitz**, *country manager* of the company. "The latter would be understood as conventional, despite being trapped in *shale*," he says.

Saying **Vaca Muerta**, usually automatically think of the *shale*. In fact, the formation is known around the world as a **huge reservoir unconventional**, often compared to productive extensions of Eagleford *shale* and Bakken in North America. But technical specialists and MVN operations beyond, and highlight the opportunity to extract oil by both conventional and unconventional methods.



**"We're here to provide a distinct look.** The Vaca Muerta shale regional everyone is talking about will have to be developed using **horizontal wells with multiple fractures technology** stages, or by multi-stage fractures in vertical wells. But we believe that there are other projects, that could occur in its entirety—that harbor oil natural fissures, easy removal and greater profitability," says the manager of the firm, which since 2007 is conducting exploration and development in three major blocks: Coiron Amargo, and Curamhuele Cortadera.

In his view, **the Vaca Muerta shale in a massive prize in the Neuquén Basin**, and the key is to have the right surface within windows of maturation. "Madalena shale assets has first class training across the three blocks. **Coirón We are exploring and developing Bitter**, who is in the oil window. Cortadera, meanwhile, is in the gas window, while in Curamhuele believe we in a transition or oil (oil and liquids)," he says.

Obviously, clarifies, the cheapness of different unconventional projects depend on the maturation window in which they are, in addition to the organic content, the depths, the costs to implement and commodity prices available. "But with thicknesses between 100 and 700 meters or more, and such extension area, the prospects are great," he says.

### **Theory own**

Most striking is that, according Riavitz, Vaca Muerta has a future in both conventional and unconventional. "There is a history of wells, such as the famous 'Descent of Palo 7', which produced no hydraulic stimulation around 720,000 bbls

(Barrels). The difficulty is to explain why other very nearby wells did not. Madalena has an explanatory theory about it, and we intend to test it in the second quarter of this year," he anticipates.

In effect, the company plans to drill an exploratory well to test whether it can produce oil in Vaca Muerta without stimulation: "We believe there are wells that are connected with a system of fractures

and fissures. The degree of fracturing is greater in some places than in others, which is difficult to determine from the surface. We sought to identify the best places to locate new wells and look forward to start drilling these high-impact exploration wells in April or May 2013," he says.

### **High potential**

In its Coiron Amargo block, where he made a total of nine wells, MVN has a greater degree of progress, beyond continuing operations in parallel with Cortadera and Curamhuele blocks. "We made six discoveries of light oil in the Sierras Blancas formation, which lies beneath Vaca Muerta. We have also completed a well with three fractures unconventional demonstrated the productive capacity of the Vaca Muerta *shale* in regional Coiron Amargo "details Riavitz.

In Cortadera, along with Apache, the company made a deep well of 4,400 meters with target Vaca Muerta and confirmed the existence of gas in such training, with almost 600 meters in the formation Quintuco (completion is still pending for the first half of this year, with potential high-impact results).

In Curamhuele, Madalena still potential assessed Agrio, another *shale* in that area has an average thickness of 180 meters. "We are also investigating the Vaca Muerta productive extension, which is expected to have a thickness of between 600 and 800 meters in the block, as interpreted in the seismic. In Curamhuele are excited both by Vaca Muerta and Agrio. We have there a well that produces Agrio without any stimulation, which encourages us to consider how best to develop this resource," he says.

In his words, Agrio is a *shale* bedrock that was for a major part of the oil produced in northern Neuquén and southern Mendoza. "In Curamhuele recorded an excellent degree of maturation (a light oil of 39 degrees API). Based on our analysis, we conclude that we have a large area to explore and analyze its viability," he says.

Also among Agrio and Vaca Muerta formation is a *tight sand* Mulichinco-gas liquids produced with good initial flow rate, but big decline, and also represents another project in the pipeline. "In sum, we are convinced that Argentina has a promising future in both unconventional *shale* s (Vaca Muerta and Agrio) and conventional (Vaca Muerta naturally fractured), and in multiple *tight sands*" he summarizes.

### **Budget aggressive**

So far, MVN has invested more than u \$ s 50 million in the country. "For a company of our size, we are talking about a very aggressive budget and according to the large expenditures involved segment," remarks Riavitz.

The company has a number of commitments to the province of Neuquén who is serving in a timely manner. "Our primary goal is to advance and understand a little better the resource in our blocks. See, for example, works our theory about the mechanism of natural fractures in Coiron Amargo. In 2013 we will drill multiple exploration wells to continue testing the Vaca Muerta formation and test regional Vaca Muerta naturally fractured," he adds.

Also, between this year and next Madalena drill in block Curamhuele. "The same goes for Cortadera, where we plan to move forward with our partner. These are times to know in depth we have," he stresses.

In northern Coiron Amargo, the firm has a concession for 25 years of a conventional discovery allows you to increase your cash flow. "We will ultimately drilling wells to stimulate oil volumes in the block," he adds.

### **Technical knowledge**

MVN has a team of professionals from different disciplines with extensive experience in Canada and Argentina, where he worked intensively in the field of non-conventional hydrocarbons. "In fact, we are about to complete four horizontal wells fractured in multiple stages. And we are applying all that *know-how* and knowledge in Argentina," says Riavitz.

From their perspective, the organization has differential qualities in the market. "We are a small company and a flexible, highly adaptable and very solid technical knowledge," said.

Finally, do not rule recognizes that any expansion plan, both in Argentina and in some neighboring nation. "However, today we are focused on determining the true value of our assets in the country," he concludes. ©