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Vaca Muerta – It's Fracking Happening!

Stratas Advisors

In 2018, oil production in Argentina reached nearly 500,000 b/d, up 2% from 2017, halting a multiyear decline. Approximately 15% of 2018 production was from unconventional sources. So far, except for a couple of wells drilled in the San Jorge Basin in the D-129 shale formation, the majority of shale exploration and development has been focused in the Neuquén Basin, specifically in the Vaca Muerta shale formation.

The Argentina state oil company, YPF, is targeting a 150% unconventional oil and gas production increase over the next five years with a total of over 1,700 wells. Plans call for using an average of 18 operated rigs in the Vaca Muerta shale play. Lately, YPF, Malaysian Petronas and Shell have been making continuous announcements regarding formal moves to full-scale development phase at their working blocks in the play. Furthermore, Chevron and YPF decided to invest a total of $800 million in drilling 20 wells in Vaca Muerta play in 2019.

Movement from companies indicates rising production from this play over the next five years. Hence, total production could ramp to more than 600,000 Boe/d by 2030 from around 97,000 Boe/d in 2017 based on monthly well level production. Incentives to operators for making investments and further developments in the Vaca Muerta shale include: 1. the 'New Gas Plan' that encourages investment in unconventional reservoirs in the Neuquén Basin, guaranteeing the gas price in local markets. 2. An agreement with the Provincial Government to reduce the labor costs. 3. Plans to reduce import tariffs on facilities for oil field exploration and production. 4. Driving down well costs, operating expenditures and development costs for horizontal wells from 2013 to 2018.

Production Outlook

The Vaca Muerta shale is geologically similar to source rocks found in North America and appears to have characteristics in common with the Eagle Ford and Bakken formations in the United States. (see Table 10 for detail) Sufficient numbers of wells have been drilled and tested to provide a high degree of certainty that Argentinian shales are productive and can be developed using similar drilling and completion techniques as done in North America. Several companies that are operating in Argentina have unveiled plans to develop the Vaca Muerta soon, other companies are still conducting exploration activities and pilot phases at a slower pace. Based on our Eagle Ford and Bakken analogues and available investment and drilling plans, Stratas developed oil and gas production outlooks from the Vaca Muerta shale by company and hydrocarbon type. (Figure 1 and Figure 2)

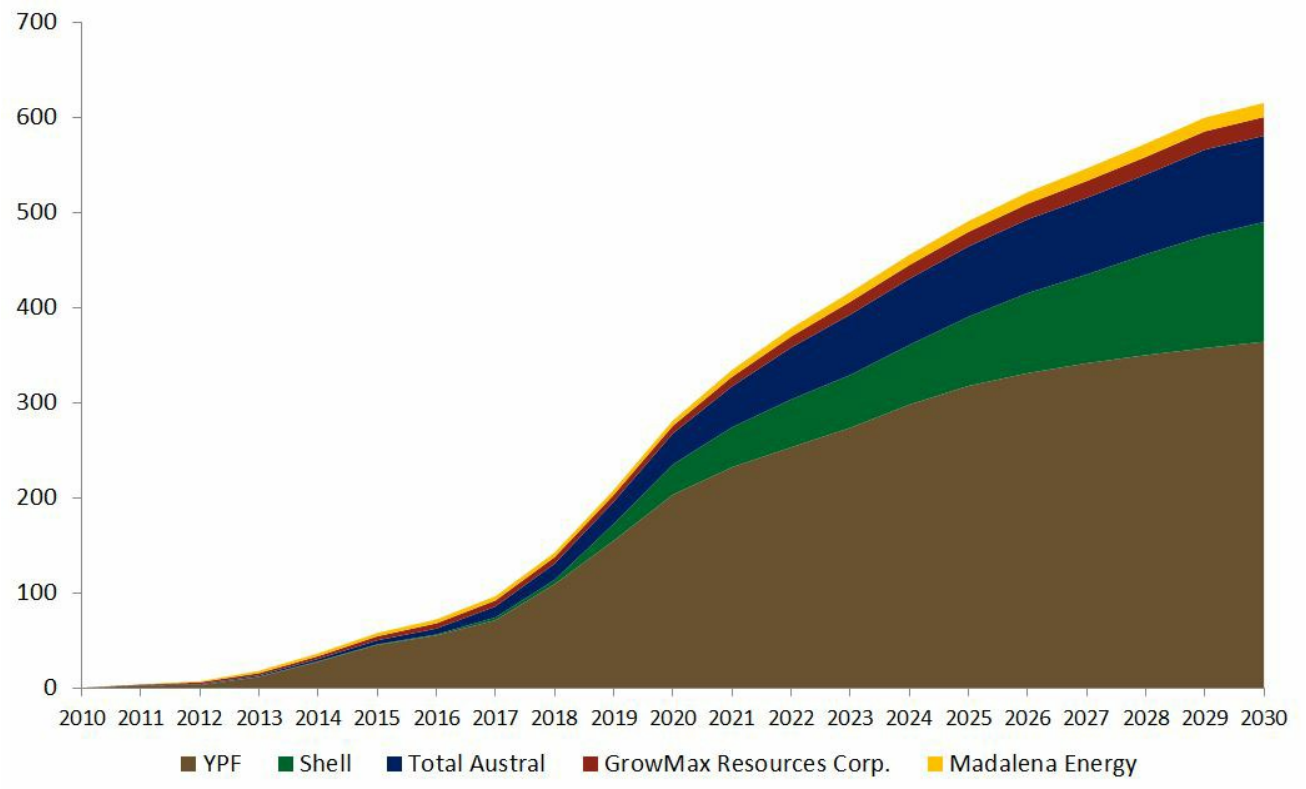
By referring to type wells in the Bakken play to the Vaca Muerta shale, Stratas completed production forecasting based on well-level estimates using geologically similar wells from North America. The number of wells to be drilled by month is estimated based on onsite rigs and operators' development plans. The performance of wells was grouped according to peak month production: high, middle, and low and each of the three groups were weighted at 33.33%.

YPF has the largest portion of production in Vaca Muerta shale. The company announced its drilling plan and average operated rig counts in the play from 2019 to 2023. Stratas estimated timing of the new wells by month from 2019 to 2030 for YPF as well as other operators. Currently, YPF is producing around 110,000 Boe/d in the Vaca Muerta shale, but YPF will quickly increase production to 365,000 Boe/d by 2030, and the

  1616 South Voss Road Suite 675 | Houston, TX 77057 | United States | +1.713.260.6426 | stratasadvisors.com

total production from Vaca Muerta shale could reach about 620,000 Boe/d.

Figure 1 Vaca Muerta Shale Production Outlook by Company



The oil and gas production from Vaca Muerta shale by hydrocarbon type is shown in Figure 2. Oil production will increase to 383,000 b/d by 2030 from 62,000 b/d in 2017, and gas production will reach 1.3 Bcf/d by 2030 from around 210 MMcf/d in 2017.

Source: CNMC

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