StageFRAC Service Increases Repsol-YPF Gas Production by 1.2 Million m³/d in Argentina

Case study: Multistage fracturing treatment reduces completion time and increases resource recovery in Loma la Lata field

Challenge
Maximize production from mature field in Argentina.

Solution
Apply StageFRAC* multistage fracturing and completion services to four newly drilled horizontal wells, three of which were producing below their expected natural production.

Results
Boosted gas production by about 600,000 m³/d from the 4 wells (as compared to production data from their respective best offset wells) while reducing completion time with a single pumping treatment per well.

Argentina’s Loma la Lata field
Repsol-YPF's Loma la Lata field in the Neuquen basin—Argentina’s biggest gas field—has been in production since 1977. In an effort to boost production from the maturing field, Repsol-YPF drilled four horizontal wells to increase reservoir contact. Only one of the wells produced naturally, at about 110,000 m³/d.

Repsol-YPF then decided to fracture stimulate the wells to improve production. Using a conventional method, stimulating three zones in one typical offset well in the area required a total of 12 days. Because an approach was needed that could treat more stages in less time while placing more proppant into the formation, the company selected the Schlumberger StageFRAC service to meet its objectives for this field.

Multiple stages in a single pass
StageFRAC technology allows precise placement of fractures to maximize reservoir contact and to increase resource recovery. Since its introduction, the StageFRAC service has been used successfully in more than 2,750 stages in more than 1.25 million ft [0.38 million m] of open hole.
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StageFRAC technology allows multiple fractures of an uncemented borehole in a single pumping treatment. Openhole packers run on conventional casing are used to segment the reservoir. Hydraulically activated sliding sleeves are located between each set of packers. Balls are dropped from the surface during pumping to open each sleeve, isolating previously fractured zones.

Exceptional results in Loma la Lata

In the first well treated with the StageFRAC service, the largest amount of proppant ever placed in a horizontal well in the Loma la Lata field—approximately three times the maximum amount achieved in previous methods—was distributed in an openhole section of the well in 4 separate stages.

Before the StageFRAC stimulation, the first well’s production rate was negligible, even after a chemical stimulation was bullheaded into the openhole section. After the StageFRAC system was run into the well and 4 treatments were pumped, the well tested at 165,000 m³ of gas and 51 m³ of condensate per day (5.8 million ft³ of gas and 320 bbl/d of condensate). Since the first treatment, 3 additional wells have been stimulated with the StageFRAC service. These four wells have contributed a total of 1.2 million m³/d (42.4 million ft³/d) of gas to the Loma la Lata field’s production.

Based on these excellent results, Repsol-YPF plans to continue using the StageFRAC service in the Loma la Lata field.

About the Contact family

StageFRAC technology is part of the permanent category of the Contact® four-category portfolio of staged fracturing and completion services. These technologies maximize reservoir contact by offering the most efficient and effective services for each well. The Contact permanent category enables fracturing and isolation of multiple stages in one pumping operation using equipment installed with the completion. Contact services can be enhanced with real-time measurement options.

<table>
<thead>
<tr>
<th>Well</th>
<th>Before StageFRAC treatment, m³/d</th>
<th>After StageFRAC treatment, m³/d</th>
<th>Best offset, m³/d</th>
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<tbody>
<tr>
<td></td>
<td>Gas</td>
<td>Gas</td>
<td>Condensate</td>
</tr>
<tr>
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<td>165,000</td>
<td>51</td>
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<tr>
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<td>543,000</td>
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<tr>
<td>4</td>
<td>0</td>
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<td>data is not available</td>
</tr>
</tbody>
</table>

“...promising and we expect to continue its use for that particular development.”

Emmanuel d’Huteau
Stimulation Leader
Repsol-YPF

www.slb.com/reservoircontact

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