Low-density ceramic proppant elevates production in Niobrara discovery - Piceance basin

Optimal conductivity improves economics in HPHT well.

Niobrara shale, Western Colorado

The challenge

The client's primary objectives for its Niobrara Piceance basin development were increasing productivity, while reducing stimulation costs, to take full advantage of the area's well-established gathering and processing infrastructure.

That goal was accentuated with the completion of its high-pressure, high-temperature (HPHT) discovery well. The well was completed with bottom hole temperatures up to 300°F and up to 10,000-psi bottomhole pressures. Proppant selection was recognized as critical to achieving optimal crush strengths and flowback resistance to ultimately provide maximum conductivity. Owing largely to the operator's successful experience with ceramic proppant in its Bakken shale oil wells, the technology was seen as a high-potential candidate for the HPHT Piceance gas well. In the Bakken wells, properly selected ceramic proppant exhibited comparatively higher conductivity than sand proppant, thereby increasing production appreciably.

The solution

Multiple proppant embedment tests were performed prior to stimulating the Piceance well CARBOHYDROPROP®, a low-density, high-transport ceramic proppant, was selected for the treatment. The cost-effective ceramic proppant exhibits greater conductivity than resin-coated sand with high-strength and superior thermal stability.

The results

The discovery well delivered an initial production rate of 16 MMcfd at 7,300 psi flowing casing pressure. Over its first 60 days, the well sustained an average production rate of 10.6 MMcfd, despite being choked back significantly. The operator reported that early indications from the Piceance discovery suggest the potential to ultimately more than double current reserves.

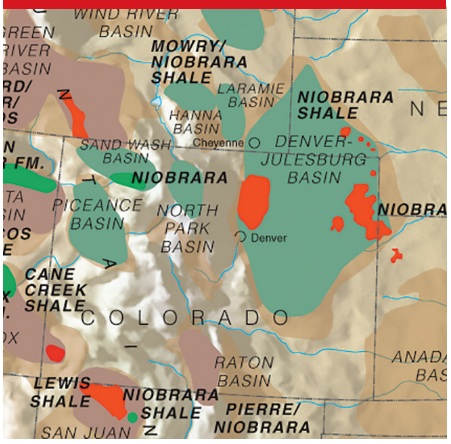
Well Data

Location: Piceance basin, Niobrara shale Western Colorado, USA

Well Type: Gas

Proppant: CARBOHYDROPROP®

Well Conditions: Horizontal discovery well to 10,200 ft TVD with a 4,600-ft horizontal lateral
Production is from 50 ft thick mudstone
Highly overpressured
17 frac stages
10,000 psi, 300°F



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