

Case study: Permian Basin, United States

Versa-Drive service milled 65 plugs without chemicals or short trips

A customer in the Permian basin contacted Baker Hughes for a solution to remove 65 **QUIK Drill™ Gen 4.0 composite frac plugs** from a 11,000-ft (3353-m) lateral section. To reduce costs, they wanted to avoid using chemical additives or short trips to bring the cuttings to surface.

The Baker Hughes team recommended a **Versa-Drive™ plug milling service** with a bottomhole assembly (BHA) featuring a 3.38-in. **Versa-Drive Ultra workover motor** and **Vanguard™ plug bit**. With self-sharpening steel teeth and increased tooth count, the Vanguard plug bit increases rates of penetration in plug milling applications. Its design also includes a high-aspect-ratio seal to extend bit life when exposed to high revolutions per minute. To prevent bearing wear and to reduce the risk of leaving cones in the well, the bit features proprietary bearing technology with larger ball bearings. The Ultra workover motor has exceptional power and is extremely durable and reliable in harsh operating conditions.

The combination of the Versa-Drive service BHA and the QUIK Drill Gen 4.0 composite frac plugs enabled a single-trip millout that generated fine cuttings which were easily circulated back to surface. No chemicals or short trips were required, and the average mill time per plug was only 10 minutes.

By using the Versa-Drive plug milling service, the customer saved approximately two days of rig time and \$120,000 USD.

Challenges

- Customer wanted to remove all plugs without chemicals or short trips
- Lateral section was nearly 11,000 ft

Results

- Milled 65 QUIK Drill Gen 4.0 composite frac plugs in a single trip without chemicals or short trips
- Achieved an average millout time of 10 minutes per plug
- Generated small plug cuttings and improved hole cleaning
- Saved approximately two days of rig time and \$120,000 USD