

Case study: West Texas, United States

Versa Drive plug milling service milled 34 composite frac plugs in one run, delivered predictable efficiency

A customer based in West Texas drilled and completed a well with 5 ½-in, 20.0 ppf casing to a total depth (TD) of 21,798 ft (6644 m). The well consisted of 34 composite frac plugs and a lateral length of 10,927 ft (3330 m).

Baker Hughes was called upon by the customer to create a solution to remove all the composite plugs and accomplish full wellbore cleanliness from surface to total depth (TD) in a single trip. This operation was set up to be executed with a 2 ⅝-in. coiled tubing string.

To achieve this objective, Baker Hughes recommended the **Versa-Drive™ plug milling service** which consists of a full set of tools suited for removing downhole obstacles. This offering is also backed by detailed pre- and post-job modeling communicated to the customer throughout the process. The Versa-Drive service is designed for reaching TD in smooth single-trip runs, doing so reliably and cost effectively.

Anchoring the Versa-Drive bottomhole assembly (BHA) deployed downhole was the new 3 ⅝-in. **UltraMax™ ADL workover motor** which can provide increased flow capabilities up to 6.25 bpm and added flexibility in operating parameters. Featuring one of the toughest, most durable bearing sections available, the UltraMax ADL workover motor has an advanced power section allowing for high torque output without compromising length, providing a resilient, versatile, and predictable plug milling machine.

The other BHA components included a coiled tubing connector, a dual flapper backpressure valve, a bi-directional jar, a hydraulic disconnect, a Hydropull extended-reach tool, and a tricone bit.

The Versa-Drive milling BHA successfully removed all plugs in a single run and established a clean wellbore all the way to TD. Over the course of the operation, the UltraMax ADL workover motor showcased its robustness in a complex and challenging downhole setting.

A pump rate of 5.0 to 5.3 bpm was utilized for the entirety of the 33-hour operation to stay within the pressure limitations of the coiled tubing workstring. Using these parameters, the 3 ⅝-in. UltraMax ADL workover motor successfully milled all 34 plugs in an average of four minutes per plug, and effectively and efficiently moved from plug to plug in an average of 30 minutes per instance. The tool used its torque rating of up to 2,200 ft-lb (2982 N m) and enhanced internal transmission section to attain these results and remove all obstacles in its path.

By using the Versa-Drive plug milling service during this flawless execution, the customer was able to complete this well successfully and secure cost savings through operational efficiency.

Challenges

- Mill 34 composite frac plugs
- Sustain high flow rate throughout the job
- Remove all downhole obstacles in a single trip

Results

- Successfully removed all 34 plugs in a single trip and cleaned the full wellbore to TD
- Incurred no health, safety and environmental (HSE) issues
- Experienced zero nonproductive time (NPT)