

Case study: West Texas, United States

UltraMax ADL workover motor, Versa-Drive plug milling service efficiently milled 89 plugs in 3.5 days

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 23,428 ft (7140 m). The well consisted of 89 frac plugs, 58 of which were composite, and 31 were dissolvable. This posed a significant challenge due to the high plug count along with the extreme lateral length of 16,076 ft (4900 m).

The customer asked Baker Hughes for a solution to remove all plugs and clean the well to TD in a single trip. This operation was set up to be executed with a threaded tubing workstring and workover rig due to the customer's fear that a coiled tubing work string might not be able to reach TD.

To achieve these objectives, Baker Hughes recommended the **Versa-Drive™ plug milling service**, which is comprised of a full set of fit-for-purpose tools backed by accurate modeling both before and after the operation. This service is focused on reaching TD in smooth, single-trip runs, reliably and cost effectively.

This proved to be the perfect application to showcase the versatility of the latest addition to the Baker Hughes thru-tubing workover motor portfolio. The bottomhole assembly (BHA) deployed downhole was powered by the new 3 ½-in. **UltraMax™ ADL workover motor** to provide increased flow capabilities up to 6.25 bpm and added flexibility in operating parameters.

The other BHA components consisted of a landing nipple, multiple pup joints, dual flapper backpressure valves, a bi-directional jar, a hydraulic disconnect, a Hydropull extended-reach tool, and a tricone bit.

The Versa-Drive milling BHA successfully removed all 89 plugs in a single run and established wellbore cleanliness to TD. Over the course of the operation, the motor exemplified supreme durability in a complex and challenging downhole environment.

Limitations in wellhead pressure as low as 100 psi (0.6 MPa) required field personnel to maintain a pump rate of 5.0 to 6.0 bpm for the entirety of the 3.5-day operation. The 3 ½-in. UltraMax ADL workover motor used its torque capability of up to 2,200 ft-lb (2982 N m) and optimized internal transmission section to withstand these operating parameters while eliminating all obstructions in its path.

By using the Versa-Drive plug milling service and the 3 ½-in. UltraMax ADL workover motor, the customer was able to complete this well efficiently and successfully despite a challenging set of circumstances.

Challenges

- Mill 89 composite and dissolvable frac plugs
- Sustain high flow rate for multiple days
- Overcome extremely low wellhead pressure
- Remove all obstructions in a 3-mile lateral in a single trip

Results

- Removed all 89 plugs in a single trip and cleaned full wellbore in 3.5 days
- Incurred no health, safety and environmental (HSE) issues
- Experienced zero nonproductive time (NPT)