Case study: Permian Basin, United States

Versa-Drive milled 66 plugs in three-mile lateral, saved $5.5 million USD

A customer in the Permian Basin drilled and completed a well with 5 1/2-in 23# casing with a target vertical depth (TVD) of 10,990 ft (3,349 m). A three-mile lateral was completed to a total depth (TD) of 26,074 ft (7,947 m). A total of 66 composite plugs were installed in the lateral, the last 15 of which were dissolvable.

The customer contacted Baker Hughes to mill out all 66 plugs in as few runs as possible to significantly reduce costs associated with coiled tubing (CT) footage charges.

To achieve the customer's objectives, Baker Hughes recommended the **Versa-Drive™ plug milling service**, which leverages a full kit of fit-for-purpose tools backed by accurate modeling to get customers to TD in smooth, single-trip runs, reliably and cost effectively.

A through-tubing bottomhole assembly (BHA) was deployed consisting of a 2.88-in **Navi-Drill™ X-treme™ AD motor** to provide increased flow capabilities, up to 4-bpm. The remaining BHA consisted of a Hydropull extended reach tool*, hydraulic disconnect, bi-directional jar, dual flapper back pressure valve, and welded coil tubing connector.

The Versa-Drive service milling BHA was deployed and successfully removed all 66 composite frac plugs in a single run. The plugs were milled in an average of five minutes each and zero stalls. The Baker Hughes team incurred no nonproductive time (NPT) and zero health, safety and environmental (HSE) issues were experienced.

By using the Versa-Drive plug milling service, the customer was able to complete the well and achieve target depth. The Baker Hughes solution also eliminated the cost of drilling and completing an additional 5,000 ft (1,524 m), saving the customer an estimated $5.5 million USD.

Challenges

- Mill 66 frac plugs in one run
- Reduce CT and fluid system costs

Results

- Milled all 66 frac plugs
- Saved $5.5 million USD by eliminating need to drill additional 5,000 ft (1,524 m)
- Incurred no HSE issues
- Experienced zero NPT

*The Hydropull extended-reach tool is a registered product of Tempress Technologies, Inc.