

**Case study:** South Texas, United States

# Versa-Drive milling service milled 306 TORPEDO frac plugs, saved \$450,000 USD

A customer in the the Eagle Ford basin in South Texas drilled and completed three wells with 5 1/2-in casing. The laterals were completed via a plug-and-perf method with a total of 306 **Torpedo™ composite frac plugs** from Baker Hughes. The plugs feature a shorter and more compact design with only a single set of slips versus the traditional two sets significantly reducing millout time compared with conventional composite plugs.

The most number of plugs in one well was 109. In an effort to reduce the plug-and-perf costs, the customer requested Baker Hughes to drill out the completions.

To mill the composite frac plugs, Baker Hughes recommended the **Versa-Drive™ plug milling service**, which leverages a full kit of fit-for-purpose tools backed by accurate modeling to reach total depth (TD) in smooth, single-trip runs, reliably and cost effectively.

The proposed bottomhole assembly (BHA) consisted of the following components: a 4 1/2-in roller cone bit, a 3 3/8-in **Navi-Drill™ Ultra™ series motor**, a **Hydropull extended-reach tool\*** with screen sub, a hydraulic disconnect, a dual flapper back pressure valve, and a coiled-tubing connector.

Immediately after the fracturing operation was successfully completed, the milling service team rigged up the milling BHA and ran it in hole on coiled tubing to remove the plugs. The millout time per plug averaged 3 minutes with a flow rate of 3.45 bpm.

All plugs in each respective well were milled out in a single trip with no motor stalls. The Baker Hughes milling team maintained consistent weight-on-bit to generate small plug cuttings and minimize the number of short trips needed to carry debris out of the well.

By using the Baker Hughes Torpedo composite frac plugs in conjunction with the Versa-Drive milling service, the customer saved 30 hours of nonproductive time (NPT) per well, equating to approximately \$450,000 USD total.

## Challenges

- Mill 306 composite frac plugs in 3 horizontal lateral sections
- Reduce NPT associated with extended reach plug milling

## Results

- Milled all 306 plug in single, respective runs
- Saved around 30 hours per well from not conducting second trip and total savings of \$450,000 USD
- Enabled early production

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