

Case History: HydroPull™



Oil States Energy Services Thru Tubing Sets North American Drill Out Records in Permian Basin with the HydroPull™ Extended Reach Tool

Case Study, Midland Basin - Wolfcamp Shale, Reeves County, TX

- Casing 5 ½-in. 20 lb./ft.
- Liner 5-in. 18 lb./ft.
- TD 22,922 ft. MD
- 2 ¾-in. Coiled Tubing
- 53 Frac Plugs

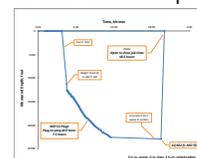
A customer in the Wolfcamp Shale in the Midland Basin drilled a horizontal well, completing it with 5 ½-in. 20 lb./ft. casing and a 5-in. 18 lb./ft. liner. The well was completed to a total measured depth of almost 23,000 ft. (7,010 m) with a lateral length over 10,000 ft. (3,048 m) long. A plug and perforate fracturing operation was conducted, with 53 big-bore dissolvable frac plugs deployed.

Prior to the plug milling operations by Oil States Thru Tubing, the Tempres Engineering team modeled the wellbore, estimating that drill out operations would take no longer than twenty-four hours using a Tempres HydroPull™ High-Flow, High-Impact extended reach tool. The conveyance method was 2 ¾-in. coiled tubing and the bottomhole assembly (BHA) consisted of a weld-on coil tubing connector, dual flapper back pressure valves, hydraulic disconnect, Tempres Screen Sub, 3 ¾-in. High-Flow High-Impact Tempres HydroPull, 3 ¾-in. Oil States high-torque motor and a roller cone rock bit.

After the initial weight check and through plug 14, a pump rate of 4.50 bpm was utilized yielding a pump pressure as low as 6,000 psi. The pump rate was increased to 5.00 bpm from plug 15 to plug 53, yielding a pump pressure as low as 6,400 psi. Even with wellhead pressures as high as 3,800 psi, the low differential pressures generated through the Tempres HydroPull and the Oil States high-torque motor, avoided high pressure pump charges all together. High viscosity-dyed gel sweeps in volumes of 5 bbls were pumped following the milling of plugs 20, 30, 40, and 50. No short trips were utilized to clean debris from the wellbore due to the powerful annular pulses supplied by the Tempres HydroPull extended reach tool.

All 53 frac plugs were milled with zero motor stalls and the plug-to-plug milling time totaled 7.5 hours and the open-to-close well time totaled 18.5 hours, far exceeding customer expectations. A second well on the same pad was drilled with nearly identical results, both establishing North American drill out records.

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