

Case study: Permian Basin

# AntiWalk technology repeatedly reduced bit walk and reached TD in a single run

Across the Permian Basin, hard stringers, natural fractures, and faults in the various formations can cause drill bits to grab and walk. This tendency to walk moves the wellbore away from the planned path. Drillers are then forced to correct, and sometimes overcorrect, for bit walk.

Too often, the result is a tortuous wellbore that looks more like a helix than the straight line the customer expected. Beyond adding time and complication to the drilling operation, well tortuosity has some long-lasting effects. It can cause the bottomhole assembly (BHA) to stick during or after drilling operations, can lead to problems while completing wells, and can actually reduce production rates and overall recovery.

**Dynamus™ extended-life drill bits with AntiWalk technology** give customers a way to track straight and stay on target so they can drill faster and deliver higher quality wellbores.

Across the Permian, AntiWalk technology has been used repeatedly to drill the entire lateral interval in a single run. In 8½-in. lateral runs, the AntiWalk bit has reduced slide time and slide footage, and outrilled competitors.

The result is faster drilling with the added benefit of superior hole quality.

On a run in Midland Basin targeting the Wolfcamp B formation, an 8½-in. The Dynamus bit with AntiWalk technology drilled the 10,061-ft (3,067-m) lateral in just 53.75 hr. The average rate of penetration (ROP) on the job was 187.2 ft/hr (57.06 m/hr), setting a new record for the customer, and contributing to the customer's fastest spud-to-TD time in the field. Compared to relevant offset wells, using the Dynamus bit with AntiWalk technology reduced slide time by 36%.

In the Delaware Basin, a customer was drilling a lateral section into the 3rd Bone Spring formation. Again, an 8½-in. AntiWalk technology was used to drill the 4,419-ft (1,347-m) lateral in a single run. At 55.5 hr, the operation averaged a 79.6 ft/hr (24.26 m/hr) ROP. The customer recorded a 50% reduction in turn rate variation, which reduced slide footage by 6%.

On a recent well targeting the Avalon formation in the Delaware Basin, AntiWalk technology was used to drill a 4,408-ft (1,344-m) lateral in a single run taking just 40 hr. The 110.2 ft/hr (33.59 m/hr) ROP was enough to out-drill two competitors on the the same

## Challenges

- Decrease bit walk caused by hard stringers, natural fractures, and faults
- Increase drilling speed and efficiency
- Reduce wellbore tortuosity

## Results

- Drilled entire lateral interval in a single run on multiple wells in the Permian Basin
- Reduced slide time on a well in the Midland Basin by 36%
- Reduced slide footage by 6% on a well in the Delaware Basin
- Out-drilled two competitors on the same pad in the Delaware Basin by 25 ft/hr, reducing drilling time by 20%

pad, by over 20%, out-pacing them by an average 25 ft/hr (7.62 m/hr). With the ability of the AntiWalk technology to stay on track, 14 stands were drilled without a single slide occurring.

Dynamus extended-life drill bits with AntiWalk technology have helped customers across the Permian

counteract the effect of hard stringers, natural fractures, and faults on drill bits. It gives them the optimal solution for drilling faster, staying on target, and delivering superior wellbore quality.

### 8½-in. lateral run results from three Permian customers

|                             | Midland Basin             | Delaware Basin                     | Delaware Basin                   |
|-----------------------------|---------------------------|------------------------------------|----------------------------------|
| <b>Target formation</b>     | Wolfcamp B                | 3rd Bone Spring                    | Avalon                           |
| <b>1-run lateral length</b> | 10,061 ft                 | 4,419 ft                           | 4,408 ft                         |
| <b>ROP</b>                  | 187.2 ft/hr               | 79.6 ft.hr                         | 110.2 ft/hr                      |
| <b>Savings to customer</b>  | Reduced slide time by 36% | Reduced turn rate variation by 50% | Out-drilled competitors by 22.7% |

**Drill bit condition**

