

Case study: Rocky Mountains, United States

AutoTrak Curve Pro RSS, Ultra XL/45 motor, and Dynamus bit save 30% in drilling costs and set new record

In the hypercompetitive energy industry, mile-a-day records have become the new benchmark.

To mitigate costs, companies rely on new technology to reach total depth (TD) faster. Despite the drive for deeper wells drilled faster, certain challenges remain commonplace, including mitigating dog-leg severity (DLS) in lateral wells to decrease torque and provide a smooth wellbore for a successful casing run. With those two divergent forces driving operator mindsets, a customer in Colorado reached out to Baker Hughes for a solution to optimize horizontal drilling.

Drawing on a proven history of reliability and multiple record-breaking drilling runs, Baker Hughes suggested the **AutoTrak™ Curve Pro high build-up rate rotary steerable system (RSS)** with continuous proportional steering and automated wellbore trajectory control system. The automated wellpath trajectory control system combines azimuthal hold, inclination hold, new electronics, and firmware to automatically correct the wellbore trajectory for any formation trends. This technology enables operators to drill wells from vertical to TD in one run. It will reduce wellbore tortuosity along with a corresponding reduction in torque and drag to drill better curve sections and longer and faster lateral sections.

In the bottom hole assembly (BHA), Baker Hughes paired the AutoTrak Curve RSS with the **Navi-Drill™ Ultra™ XL/45 drilling motor** and an 8.5-in. **Dynamus™ extended-life drill bit**. This is the highest performance motor in the 6 ½-in. to 7-in. size range, providing greater horsepower, more torque at the bit, and higher differential pressure, which helps enhance rate of penetration—performance gains that add up to overall drilling cost savings.

The combination of Baker Hughes technologies worked flawlessly, mitigating DLS in the lateral with an average of 0.6°/100 ft (30 m), all while drilling with an average on-bottom rate of penetration (ROP) of 630 ft/hr (180 m/hr).

The result proved to be a regional record of 10,308 ft (3142 m) drilled in a single 24-hr period, breaking the customer's previous record of 9,961 ft (3036 m). Baker Hughes achieved this record using remote operations. There was one measurement-while-drilling technician on location and the directional drillers steered the well remotely during this operation.

By deploying both the AutoTrak Curve Pro RSS, the Navi-Drill Ultra drilling motor, and the Dynamus drill bit, the customer boosted drilling efficiency, had no non-productive time (NPT), and saved 30% on drilling costs.

Challenges

- Mitigate DLS in lateral
- Optimize drilling processes to provide smooth wellbore for the casing run

Results

- Achieved 0.6°/100 ft (30 m) DLS in the lateral section
- Drilled well to a total depth of 10,308 ft (3142 m) in 24 hr
- Achieved regional record for deepest well drilled in a day
- Reduced drilling costs by 30% by reaching TD faster