

Case study: Rocky Mountains, United States

ROS team uses RSS/motor combo to drill 1.95 miles in 24 hr, save 30% in 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 **Remote Operations Services (ROS)** team used the **AutoTrak™ Curve high build-up rate rotary steerable system (RSS)** with 3D Hold to drill the well. This approach enables operators to drill wells from tangent to TD in one run while maintaining angle and direction in the lateral, reducing tortuosity and torque and optimizing drilling.

In the bottomhole 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 Baker Hughes ROS team deployed the technology 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 with only one measurement while drilling technician on location during this operation.

By deploying both the AutoTrak Curve RSS and the Navi-Drill Ultra drilling motor, the customer boosted drilling efficiency, ultimately saving approximately 30% on drilling costs due to time saved. No nonproductive time (NPT) was incurred, and the health, safety and environmental (HSE) impact was negligible.

Baker Hughes has drilled numerous other mile-a-day wells by delivering efficient, consistent and high-quality performance remotely.

Challenges

- Execute job with minimal personnel on site
- Mitigate DLS in lateral
- Optimize drilling processes to provide smooth wellbore for the casing run

Results

- Executed drilling operation remotely with only a single MWD hand at the well site
- 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