

Case Study Regional Spotlight: Eastern Siberia

Remote drilling and MWD executions save hundreds of drilling days and deliver record performance

In 1998, Baker Hughes initiated its first program to begin drilling wells remotely in order to minimize health, safety and environmental (HSE) risks, drive efficiencies, and improve overall performance quality and consistency. The value of that investment is becoming increasingly clear as a significant number of the company's regions are leveraging this approach to deliver multiple, quality services more efficiently and consistently than ever before.

Over the last two years, Baker Hughes has drilled 60+ multilateral wells in Eastern Siberia. The products and services provided on these wells included drill bit, multiple **AutoTrak™ rotary steerable systems**, and a variety of measurement while drilling (MWD) and logging while drilling (LWD) services.

Among those wells was a significant multilateral with 15 branches that totaled 12 394 m (40,660 ft) in drilled footage. On this well, Baker Hughes

also improved rates of penetration (ROP) in multiple sections of the well as compared to previous drilling programs.

One of the key factors of this service was the fact that more than half of the MWD work executed by Baker Hughes in Eastern Siberia over the past six months has been remotely operated. A significant, and growing, percentage of the company's Eastern Siberia directional drilling work is also being handled through

Remote Operations Services (ROS).

As part of this effort, Baker Hughes also developed and deployed proprietary software to monitor and provide alerts for key wellsite parameters, flag potential decoding anomalies, and manage the satellite bandwidth economically during times of heavy data traffic. The company also established a direct communications system between the remote team and the rigsite personnel to avoid delays in implementing actions on location.

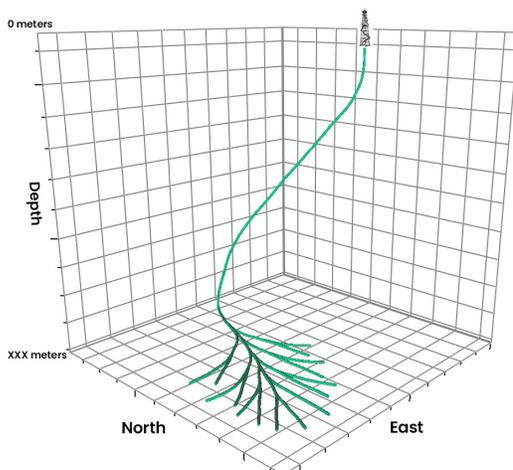
Challenges

- Improve performance quality in remote Eastern Siberian operations
- Drive operational efficiencies
- Ensure consistent results
- Reduce formation evaluation (FE) processing/delivery times
- Minimize HSE risks

Results

- Drilled more than 60 multilateral wells in the last two years
- Reduced average multilateral kickoff times by 20 hours vs. previous contractor
- Saved 137 days in client rig time in 2019
- Established field records with two different wells in 2019
- Achieved superior HSE results

Complex 15-leg multilateral



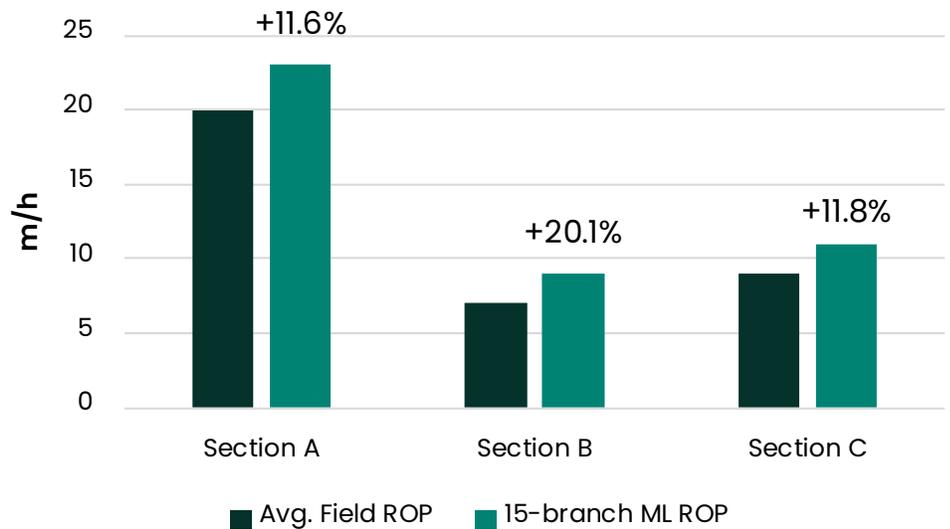
The Baker Hughes ROS team worked with its wellsite team to drill and log a complex, 15-branch multilateral well in Eastern Siberia.

As a result, Baker Hughes helped reduce kickoff times on these wells by 20 hours compared to the previous contractor—saving the client 137 days of rig time in 2019 alone.

In addition to leveraging remote operations and advanced technology to deliver higher quality services for the customer, Baker Hughes also developed a customized, automated approach to finalizing and uploading logs and other formation evaluation (FE) data—reducing delivery times for a key client in the region by approximately 30%. With rare exception, most of the final deliverables for a formation evaluation service are passed on to the client within 24 hours after pulling out of the hole.

Baker Hughes is committed to delivering an ever-increasing number of its services remotely to ensure high-quality, efficient, and consistent performance everywhere it operates.

ROP (including connection times)



Baker Hughes ROS helped drive operational efficiency on a complex, 15-branch lateral—delivering significant ROP improvements in each of the well sections as compared to offset wells in the area.