

# PowerDrive Archer RSS in PowerDrive vorteX Configuration Saves 12 Drilling Days, Kazakhstan

High build rate RSS delivers constant 10°/30-m DLS and last interval in one run

## CHALLENGE

- Minimize high risk of differential sticking.
- Avoid potential for hole stability issues.
- Achieve DLS of 10°/30 m through troublesome formation.
- Reduce downhole shock and vibration.
- Achieve planned drilling performance, including target ROP.

## SOLUTION

- Drill planned trajectory with a fit-for-purpose, integrated BHA that includes the PowerDrive Archer\* high build rate RSS.
- Used a PDC bit equipped with FireStorm\* wear-resistant high-impact PDC cutter technology.

## RESULTS

- Achieved the curve and drilled the lateral section in a single run.
- Saved 12 days of construction time.
- Saved up to 6 hours of drilling time using the QuikDownlink\* continuous-circulation downlink service.



## Meet aggressive well plan requiring high drilling performance through reservoir section

Zhaikmunai LLP developed a well plan that included a high DLS of 10°/30 m for a lateral section through a formation that presented a high potential for differential sticking and hole instability. Objectives for the plan also included minimizing shock and vibration risks, as well as improving drilling performance and increasing ROP.

## Use the PowerDrive Archer RSS to achieve directional requirements

Schlumberger experts worked with Zhaikmunai to identify the different drilling technologies needed to meet the challenges of the well plan. It was clear that PowerDrive RSS technologies could address potential hole stability issues and the prospects of stick/slip, along with shock and vibration.

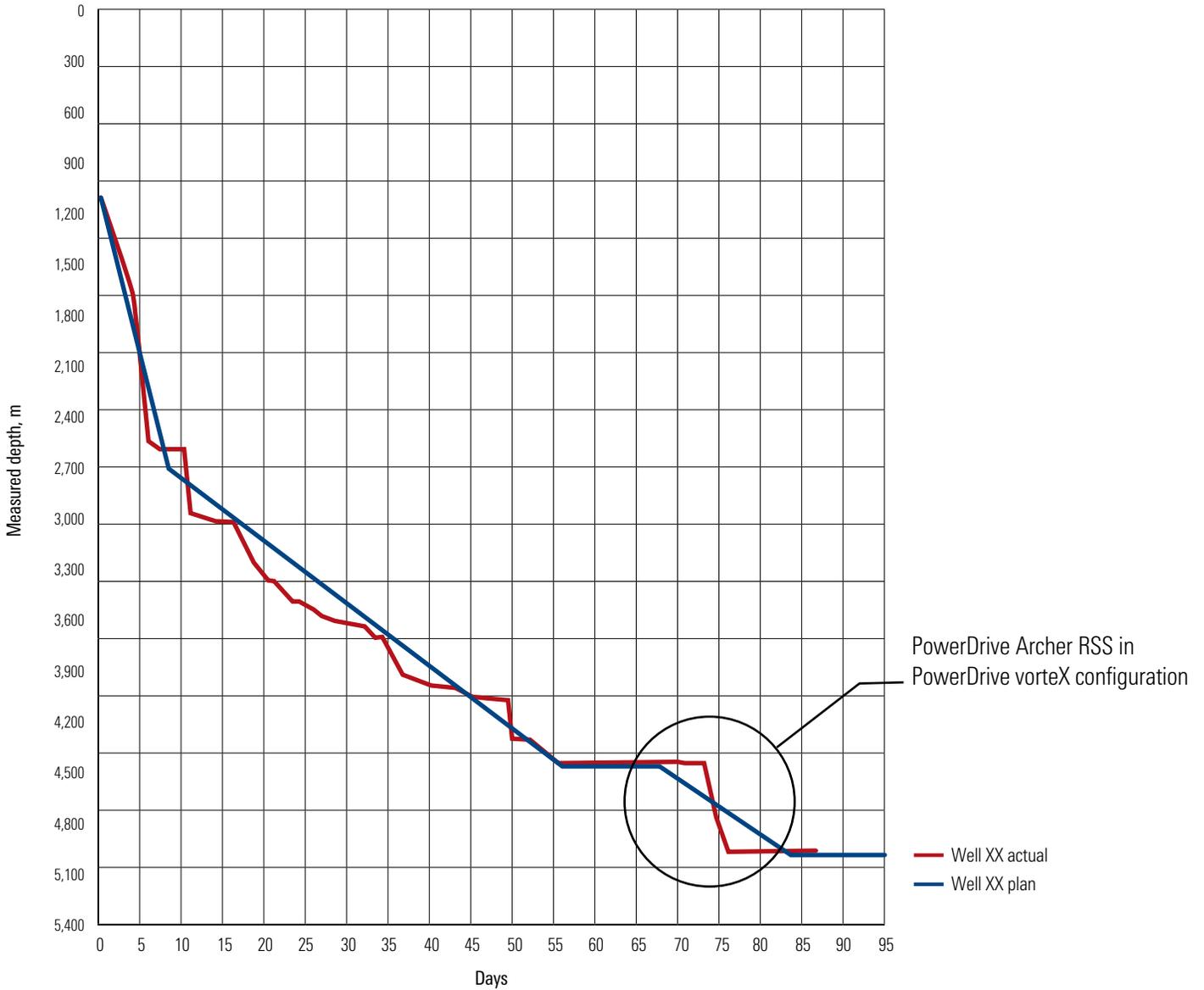
The recommended solution was an integrated BHA that included a PowerDrive Archer RSS, incorporating QuikDownlink service. In addition, Zhaikmunai used a PDC bit equipped with FireStorm technology and designed using the IDEAS\* integrated dynamic design and analysis platform to drill the entire section in a single run. This would provide Zhaikmunai with flow-independent downlink capabilities and increased DLS capability for better trajectory control in unconsolidated formations. To facilitate a longer run and reinforce the increased ROP benefits of a PowerDrive Archer RSS, the BHA incorporated motor features in a PowerDrive vorteX\* configuration specifically designed to overcome the rig standpipe pressure limitation. A rotor nozzle was installed to bypass part of the flow and extend motor capacity. This would also help reduce the risk of sticking as well as shock and vibration.

## Achieved high DLS and completed lateral in single run

Zhaikmunai deployed the BHA, marking the first time a PowerDrive Archer RSS in a PowerDrive vorteX powered RSS configuration was used to drill a 6-in section in Kazakhstan. Not only was a constant DLS of 10°/30 m sustained through the curve, but the lateral section was drilled to 515 m [1,690 ft] in a single run over 42 drilling hours. In addition, the QuikDownlink service was used 83% of the time to enable steady flow and stand pipe pressure, both of which are very important for preventing differential sticking. This reduced drilling time by up to 6 hours under planned. And the 4½-in liner was run with no issues. Combined, the success of the run and resulting wellbore quality helped to reduce the overall well construction process by 12 days.

CASE STUDY: PowerDrive RSS technologies help Zhaikmunai reduce overall well construction by 12 days

Actual vs Plan  
Well XX Time Depth Curve



Zhaikmunai used PowerDrive RSS technologies combined with QuikDownlink services to reduce overall drill time and well-construction time by 12 days.

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