**CHALLENGE**
Reduce construction time while drilling horizontal wells to access more pay zone in a complex reservoir.

**SOLUTION**
Design application-specific BHAs that included the PowerDrive X6 vorteX* motorized RSS, PowerDrive Archer vorteX* motorized high build rate RSS, PowerDrive X6* RSS, Smith Bits 8½-in MDSi616 PDC drill bits, ImPulse* integrated MWD platform, TeleScope* high-speed telemetry-while-drilling service, and a saturated salt mud system from M-I SWACO, a Schlumberger company.

**RESULT**
- Drilled the 1,412-m [4,634-ft] pilot hole in a single run at average ROP of 20.4 m/h [66.9 ft/h].
- Achieved a field record for footage drilled in a day.
- Eliminated multiple runs that would be required using a positive-displacement motor (PDM), saving 9 days of rig time and USD 117,000.

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**Drill horizontal well in complex Yaraktinskoe field**
Irkutsk Oil Company (INK), established in 2000 by uniting several small oil and gas producers operating in Russia, was drilling one of its largest projects in Yaraktinskoe field. The field—a complex oil and gas condensate field represented by rocks of the Cambrian system and unpredictable dogleg responses—is one of the operator’s most important projects. This complex 3D profile would include kicking off with a cement plug, which would require numerous runs if the operation was performed using a conventional PDM. INK’s goal was to reduce construction time while drilling high-output horizontal wells to access more pay zone and thereby increase production volume in the field by more than 30%.

**Design drilling systems comprising advanced RSS technologies**
Schlumberger provided an integrated team approach, from planning and engineering to execution and drilling, through its PetroTechnical Engineering Centers (PTECs). Experienced petrotechnical experts and wellsite engineers at the PTECs use advanced software and technology to engineer drilling fluids and assemblies that maximize ROP and daily footage. PTEC analyses and services define tripping schedules and help minimize well placement uncertainty.

To reduce the total construction time, the Schlumberger project team proposed drilling a horizontal well and a pilot hole using the latest motor-assisted RSS services, 8½-in PDC drill bits from Smith Bits, a Schlumberger company, and a saturated salt mud system from M-I SWACO to improve hole cleaning. The 8½-in pilot hole would be drilled using PowerDrive X6 vorteX RSS, and the production section would be drilled using PowerDrive Archer vorteX RSS. The horizontal wellbore would be finished using PowerDrive X6 RSS and the ImPulse MWD platform.

**Set a footage record and save 9 days of rig time**
Through proper planning and preparation, the pilot hole was drilled in less than 79 drilling hours in a single 1,412-m run at average ROP of 20.4 m/h. The sidetrack was performed from the cement, drilled with 4°/30-m inclination, and landed in the horizontal section. The run set a record for footage drilled per day in the field at 520 m [1,706 ft]. The integrated drilling system delivered the well in less than 8 days, saving 9 days off plan and USD 117,000. This operation marked one of the few cases that the PowerDrive vorteX 675 RSS was used for sidetracking and was the RSS’s first run in Russia.

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The application-specific drilling system saved INK 9 days of rig time.

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