

Erratic Surface Torque and Drillstring Vibrations Eliminated in Underreaming Operations

Integrated solution enables operator to successfully enlarge 24-in directionally drilled pilot hole to 28 in under extremely harsh conditions offshore Sakhalin

CHALLENGE

Underream 24-in directionally drilled pilot hole to 28 in without BHA-damaging drillstring vibration or erratic surface torque.

SOLUTION

Use integrated drilling solution incorporating prejob BHA modeling, drilling-type underreamer, TeleScope* high-speed telemetry-while-drilling service, and modular vibration chassis to monitor shock and vibrations.

RESULTS

- Underreamed 24-in pilot hole to 28 in with no shock and vibration or surface torque fluctuations.
- Ran 24-in surface liner to planned depth.



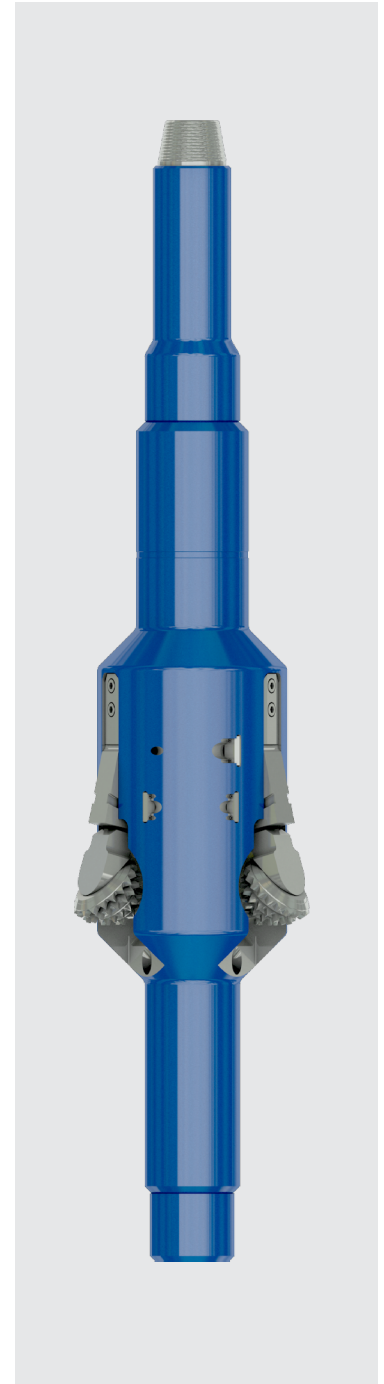
Reduce risk and avoid NPT

Sakhalin Energy Investment Company, Ltd. (Sakhalin Energy) had experienced high vibrations levels and surface torque fluctuations while underreaming the tophole sections of directional wells offshore Sakhalin Island to expand 24-in pilot holes to 28 in. Because the vibrations and torque fluctuations caused by the extremely harsh drilling environment could potentially overtorque and twist off BHA connections, Sakhalin Energy wanted to minimize that risk and avoid the NPT a twist off would cause.

Analyze BHA options for minimal S&V

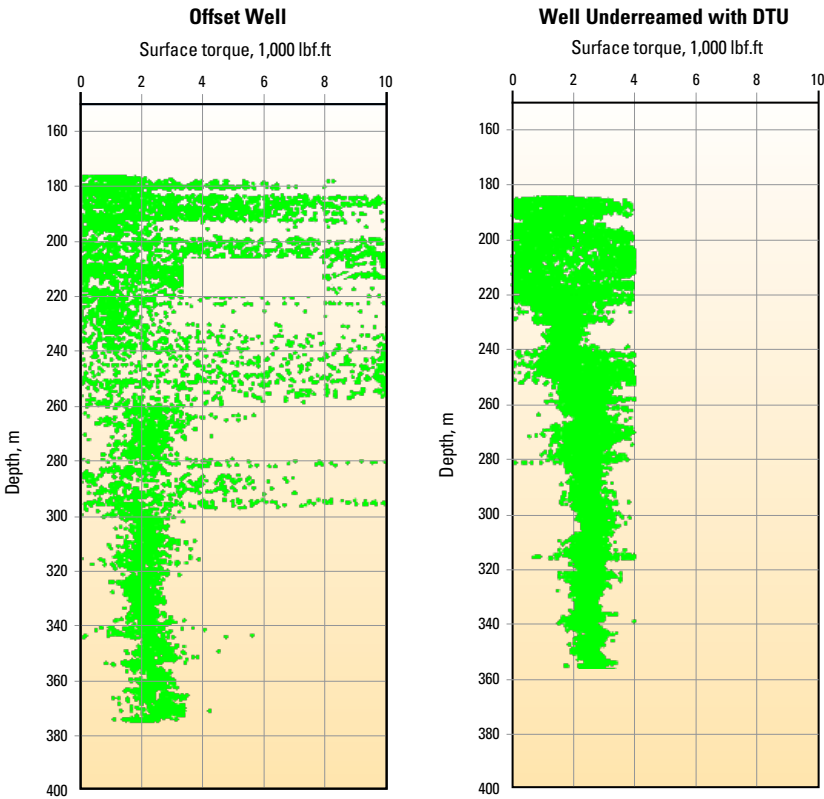
Schlumberger provided an integrated solution that achieved Sakhalin Energy's objectives, using prejob modeling to analyze BHA options and select the one that would best minimize shock and vibration and reduce or eliminate surface torque fluctuations. The BHA selected incorporated a Schlumberger 17000 series drilling-type underreamer (DTU) instead of the near-bit reamer from another oilfield service company used in previous wells.

Other BHA components included a bullnose below the DTU and a collar for the TeleScope high-speed telemetry-while-drilling service above the DTU. A modular vibration chassis (MVC) cartridge in the TeleScope service collar allowed real-time monitoring of drillstring vibrations while underreaming, enabling the directional driller to take the actions necessary to mitigate the risks, if required.



The DTU has three retractable cutting arms that are opened and held in position by continuous hydraulic pressure.

CASE STUDY: Integrated drilling solution enables operator to successfully enlarge 24-in pilot hole

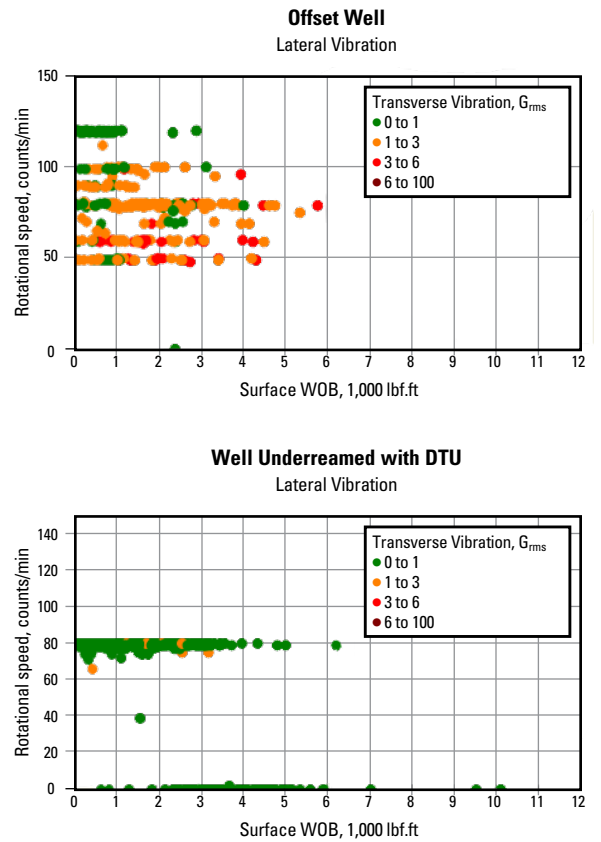


Use of the DTU minimized the surface torque fluctuations that occurred in an offset well underreamed with a near-bit reamer from another oilfield service provider.

Eliminate shock and vibration

The Schlumberger solution integrating the DTU, MVC monitoring of drillstring dynamics, and TeleScope high-speed telemetry service enabled the 24-in pilot hole to be enlarged to 28 in with no issues. No shock and vibration or surface torque fluctuations were observed during the underreaming operation, and the 24-in surface liner was successfully run to its planned depth of 374 m.

Contact your local Schlumberger representative to learn more.



The DTU BHA avoided the severe lateral vibration and stick/slip experienced in an offset well underreamed with a near-bit reamer from another oilfield service company.

slb.com/drillingdynamics



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