SMITH BITS
A Schlumberger Company

First-Time Casing-While-Drilling Operation in Permafrost Eliminates Surface Casing Drillout Run

Permafrost is no obstacle for 16¾-in XCD casing-while-drilling alloy casing bit

The XCD* casing-while-drilling (CWD) alloy casing bit, specially designed for drilling vertical or tangential wells to TD in one run, withstood potential damage to the surface rig structure from drilling in permafrost. Nearly 524.5 m was drilled from surface to TD within 60 h.

Gazpromneft-Zapolyarye's concerns

Gazpromneft-Zapolyarye wanted to reduce drilling time and potential damage caused from drilling in permafrost. Drilling using 16¾-in casing had not been done before, and on-time delivery of the uncommon torque ring sizes presented a challenge.

What Schlumberger recommended

The XCD bit is specially designed for drilling vertical or tangential wells to TD in one run. This PDC bit drills on standard casing that is rotated at the surface.

The sub of the XCD bit is composed of durable oilfield-grade steel, and its body is bronze. This unique composition enables it to be drilled out by any standard PDC bit after the XCD casing bit has drilled to TD and the casing has been cemented. After drillout, the drillout PDC bit can continue drilling the next interval, eliminating the need for a dedicated drillout run.

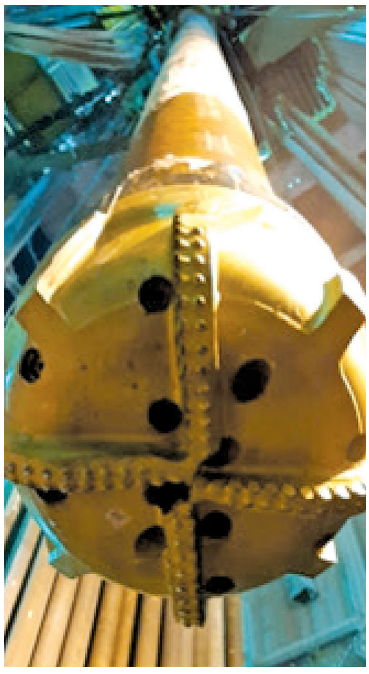
Torque rings to fit 16¾- × 22-in casing were produced from customer-provided casing joints in a local Schlumberger facility for Russia and Caspian Sea operations. A third-party expert supervised manufacturing.

What was achieved

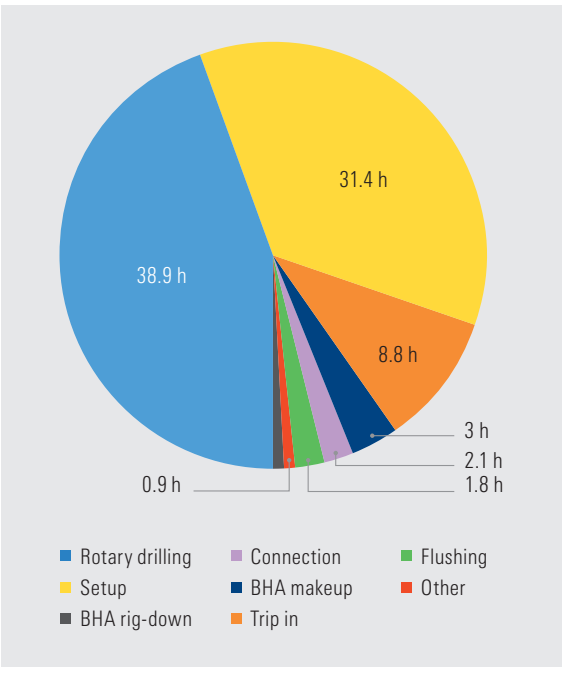
Nearly 200 uncommon torque rings were manufactured and delivered a week before drilling began. Gazpromneft-Zapolyarye and Schlumberger conducted this first-time CWD operation with the 16¾-in bit in permafrost to drill a total of 524 m from surface to TD within 60 h. Casing while drilling saved at least several days from the well construction process by eliminating additional wipe trips and a dedicated casing run, minimizing time exposure in the permafrost.

Well design and completion technologies are a key technological challenge in conditions of low reservoir permeability, as well as high reservoir pressures and temperatures. They should combine high reliability and low cost, which will make the project more efficient. Casing while drilling is one of the steps to solving this problem, the preparation and implementation of which in a very short time became possible due to the coordinated work of all the participants of the project.

Drilling Manager, Gazpromneft-Zapolyarye



16¾-in XCD casing-while-drilling alloy casing bit.



Operations summary.

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