

Statoil

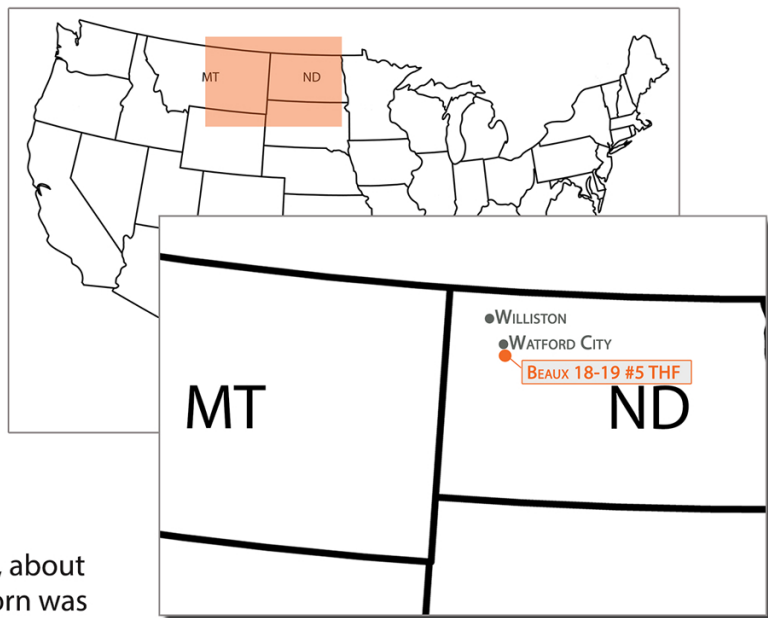
Beaux 18-19 #5 TFH
North Dakota, USA
Nabors B-19

Longhorn was called out by Statoil for our first Stubby run in the Bakken shale play in North Dakota. The Bakken consists of fragile geological formations such as dolomite, shale, sandstone and siltstone that can fracture causing sloughing, bridges and washouts. The shales can swell after drilling, closing the wellbore and increasing drag while running casing.

The trial well was southeast of Watford City on Nabours-B19, about an hour and a half away from Williston. Upon arrival, Longhorn was informed that the TMD for the intermediate section was 3,610 m (11,844 ft), with the kick off for the build section beginning at 3,353 m (11,000 ft). Problems were expected due to multiple doglegs between 7 degrees and 13 degrees, swelling shales, and the inclination increasing past 90° to 102°. The consultant on lease provided a copy of the casing running procedures which included a slow-but-steady run speed, low pump rates to prevent surging of the formation, and called for circulating in each joint for the final 213 m (700 ft). By circulating while running in, the 7" Stubby was constantly engaged, ready to act as a reaming tool as soon as resistance was encountered.

Breaking for circulation at 3,397 m (11,147 ft), the next joint was run in and the weight indicator showed approximately 17.8 kdaN (40,000 lbs) of wall drag. The joint was then pulled back out and re-ran, and this time only 8.9 kdaN (20,000 lbs) of drag was experienced, showing that the Stubby was effectively reaming the swelling shale. This procedure continued for each joint, with the same results as far as drag reduction until 3,590 m (11,780 ft). At this point, the tool tagged an obstruction and took weight. The directional survey indicated that the interval had a 12 degree dogleg. The flow rate was increased and the string was ran through this section of the well a total of 6 times, efficiently cleaning up the well bore to reduce drag before continuing further.

The Stubby, equipped with a Casing Pilot bit, is designed to seek open hole; when resistance is experienced, it rotates until it finds the free point, extending hydraulically to push past the dogleg. Once past, the tool continued reaming to bottom, and was successfully landed at TD an hour later at 3,607 m (11,835 ft).



Run Summary

Client:	Statoil
Tool:	7" Stubby PDC Drillable
Bit:	7" Casing Pilot
Target:	7" Intermediate Casing
Hole Size:	222 mm / 8 3/4"
TMD:	3,610 m / 11,843 ft

Total Run Time: 22 Hours

Noteworthy

The Stubby worked through several dog legs that deviated between 7° and 13°. Swelling formations resulted in increased wall drag, and the Stubby was used as a reamer. For the last 700 ft, each joint was circulated in, and then pulled back to be re-ran. Each time, the Stubby was able to cut the hole drag in half.

