D-TECH ROTARY STEERABLE SOLUTIONS

ADDING VALUE THROUGH DRILLING ACCURACY AND RELIABILITY

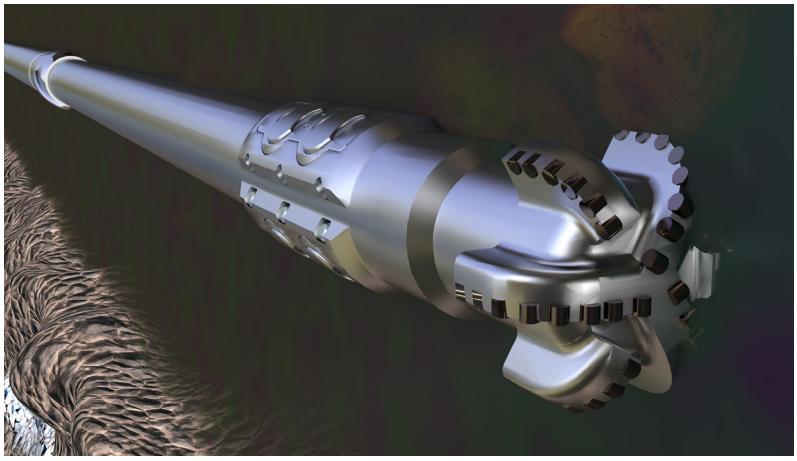
ACCURACY

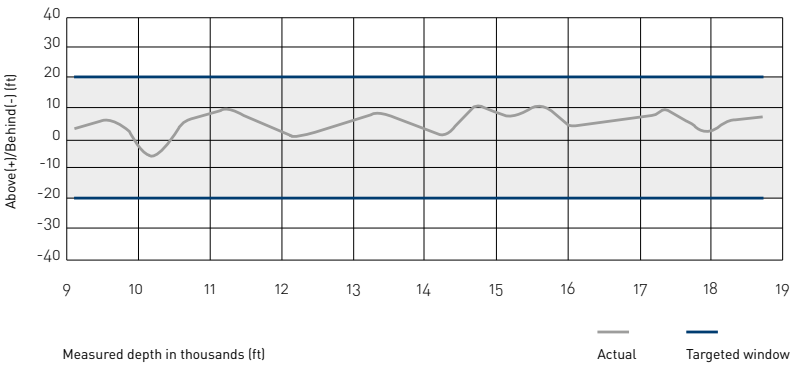
INCREASING WELLBORE ACCURACY

CASE STUDY

CHALLENGE

Accuracy of drilling is fast becoming a top priority for operators, as they look for ways to maximize the value of each project whilst reducing costs. For one of D-Tech's clients in the Permian, achieving pinpoint accuracy was a must-have, as it attempted to drill a 10,000ft lateral wellbore in a single run while maximizing rate of penetration (ROP) and reducing wellbore tortuosity.





SOLUTION

Deploying a rotary steerable solution was the only way to achieve the necessary accuracy and ROP needed to complete the job in the required parameters. Working with D-Tech, the client was able to deploy a solution which is easily controlled to make the smallest of changes and ensure a consistent, accurate wellbore.

The D-Tech RST675 was deployed in conjunction with a measurements-while-drilling (MWD) tool and positive displacement motor. The rotary steerable tool (RST) was configured with advanced inclination and azimuth control software, specifically designed for drilling long laterals.

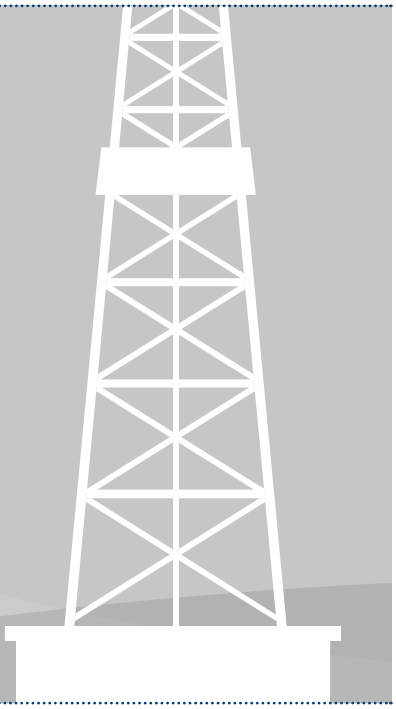
In order to increase ROP and reduce stick-slip, a 7/8 3.0 stage 0.16 rev/gal motor was run above the MWD tool. In this configuration the bit to directional sensor package was 26ft. Through experience of drilling other shale plays, a 6 blade, short gauge bit with a TFA of 0.77 in^2 was recommended and used by the operator.

RESULTS

Working with D-Tech, the client successfully completed the entire section of 9,684ft in a single run, which lasted 132 hours. During the entire process due to the accuracy provided by the RST675, the drilling inclination was maintained within 1 degree of the target at all times and within +-10ft of target true vertical depth (TVD).

Azimuth corrections were made while maintaining inclination in order to counteract formation push and the bottom-hole assembly (BHA) walk tendency. The result was a wellbore with doglegs averaging 1.2 degrees/100ft.

The smooth, straight wellbore reduced torque and drag, which enabled the BHA to be tripped out of the hole on job completion with no issues. The accurate and smooth nature of the wellbore has also ensured RST longevity and reliability, helping the client maximize the return on their investment and enhance the value of future projects.



TOOL SPECIFICATION	RST475	RST675	RST900
Tool size	4 3/4"	6"	9"
Hole size	6 – 6 3/4"	8 1/2" – 8 3/4"	12 1/4"
Flow rate	200–400 gpm	275–675 gpm	600—1000 gpm
Rotation rate	40–180* RPM	40–180* RPM	40–180* RPM
Max operating temp	302°F (150°C)	302°F (150°C)	302°F (150°C)
Max operating pressure	15,000 psi	15,000 psi	15,000 psi
Max WOB	30,000 lbf	50,000 lbf	75,000 lbf
Max torque at bit	6,000* ft lbf	16,000* ft lbf	40,000* ft lbf
Tool length	13 ft	13 ft	13 ft
Bit pressure drop	380–570 psi	380–570 psi	380–570 psi
Connection up hole	3 1/2 IF Box	4 1/2 IF Box	6 5/8 Reg Box
Connection down hole	3 1/2 Reg Box	4 1/2 Reg Box	6 5/8 Reg Box
Max dog leg	8 degrees/100ft	8 degrees/100ft	4 degrees/100ft
Down-linking	25% flow rate variations	25% flow rate variations	25% flow rate variations

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