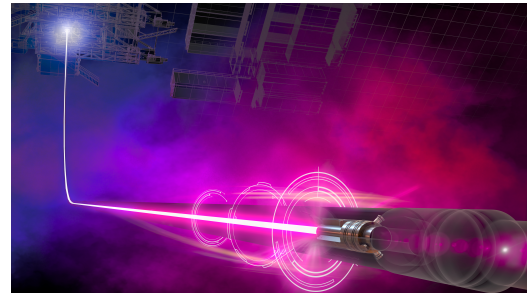


Operator Overcomes Friction Reduction Devices Interference and Constantly Decodes Downhole Data from Shoe to Well Total Depth

QUICKPULSE™ AUTOMATED DIRECTIONAL GAMMA SERVICE DELIVERS RELIABLE SERVICE OVER A TWO-MILE RESERVOIR SECTION DRILLED WITH A DUAL AGITATOR CONFIGURATION

PERMIAN BASIN, TEXAS

An operator in the Permian Basin challenged Halliburton Sperry Drilling to drill a two-mile lateral section to well total depth with a dual Friction Reduction Device (FRD) drill string configuration. FRD, often referred to as agitator, historically interferes with mud-pulse telemetry due to the large pressure drop it creates when operating. They draw out the signal amplitude and create pulse echoes on the pressure baseline. Cumulating them only increases the amount of interference, making it even more difficult to maintain detection.



The QuickPulse automated directional gamma service was chosen to overcome the challenge for its robustness and flexibility. It generates large pulse amplitude over a wide range of transmission frequencies adjustable from surface. The pre-run signal modelling performed by the Sperry Drilling team also allowed to optimize the two agitators placement for minimal interferences and to select the most suitable pulser frequency.

As a result, constant automated detection was achieved despite the challenges posed by the FRDs. The QuickPulse system delivered over 1 point per foot gamma ray data in real time throughout the two-mile run. The combination of the pumps-off survey and data dependent updates for vibrations and toolface further optimized the bandwidth. This ensured the right data was provided at the right time for the users to steer the well while preserving the BHA integrity.

Since this great achievement, the QuickPulse automated directional gamma signal strength with dual FRDs was demonstrated on other well pads, reducing well time for customers with quick and reliable downhole Information.

BHA Configuration

BHA Component	Description	OD (in)	ID (in)	Length (ft)	Cumulative Length (ft)
PDC	HDBS GTD65DO PDC	5.750	2.250	1.05	1.05
Mud Motor	5" StrataForce™ high-performance motor	6.500	1.750	32.23	33.28
Float Sub	6 3/4" Float Sub	6.625	2.813	2.18	35.46
Orienting Sub UBHO	6 3/4" NM Orienting Sub UBHO	6.750	2.500	2.62	38.08
QuickPulse™ Service	6 3/4" NM Drill Collar	6.750	3.250	30.91	68.99
Directional	PCDC Sonde	1.750			68.99
Gamma Ray	PCG Sonde 2.0"	2.000			68.99
Pony Collar	6 3/4" NM Pony Collar	6.688	3.313	12.33	81.32
Drill Pipe (S)	31 Stands 5" Drill Pipe	5.000	4.276	2923.49	3004.81
Sub	Impulse Ball Drop Agitator	6.500	2.875	20.47	3025.28
Drill Pipe (S)	42 stands 5" Drill Pipe	5.000	4.276	3961.88	6987.16
Sub	Impulse Ball Drop Agitator	6.500	2.875	20.85	7008.01

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