

Synapse performance insights and optimization service

Provides postrun, at-bit dynamics data to optimize drilling operational safety and effectiveness

Applications

At-bit data acquisition is crucial for directional and vertical wells alike. This type of data enables quick analysis to optimize drilling parameters on upcoming wells.

How it improves wells

Synapse* performance insights and optimization service uses a memory-mode shock and vibration logging tool located inside Smith Bits PDC and roller cone bits. It provides postrun data to evaluate drilling system performance by measuring 3-axis acceleration, torsional vibration, and rpm. The data is quickly processed and customized, per the customer's requirements, to provide an improved understanding of downhole events and identify performance limiters.

Postrun analysis of Synapse service data enables quick development and adjustment of drilling parameters, further optimizing drilling performance for improved overall efficiency while downhole. Additionally, the data helps reduce premature tool failure, direct tool maintenance systems, evaluate performance of new motor designs, and optimize the bit selection.

How it works

The Synapse service is a self-contained sensor module housed within the bit for true at-bit measurements. Its nonmagnetic assembly prevents interference within the BHA. And the memory-mode logging with optional preset sleep mode enables efficient data acquisition (rotational speed, shock and vibration, and temperature).

Additional information

Schlumberger experts can assess BHA drilling efficiency and deliver synthesized data within 24–48 hours.



The Synapse performance insights and optimization service sensors are fitted within drill bits.

Specifications			
Measurement	Range	Processing	Sampling Frequency
3-axial shock	±200 gn	RMS [†] , peak, mean	800 Hz
3-axial vibration	±16 gn	RMS [†] , peak, mean	800 Hz
rpm	±666	Min., max., mean, stick/slip	1,125 Hz
Torsional acceleration	±6.4 × 10 ⁶ /s ²	Peak, mean	1,125 Hz
Temperature	-40 to 125 degC	Mean	1 Hz
Recording time	Up to 200 h		
Burst mode			
	10-min interval and 10-s duration		
3-axial shock			800 Hz
Torsional acceleration			1,125 Hz

[†] Root-mean square.