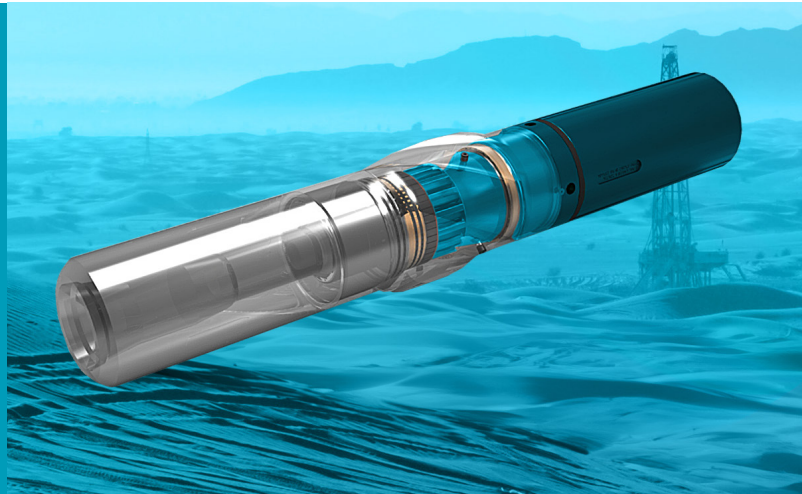


Expro Excellence

HI TOOL® Harmonic Isolation Tool improves drilling performance, sets field record ROP in a vertical well

Well Construction | Drilling Technologies



Objectives and background

- A Middle East operator sought a solution to reduce vibrations, improve bit performance and bit life
- The Expro HI TOOL® (Harmonic Isolation Tool) was deployed in drilling a 16" vertical section with a mud motor through the top interbedded formations. Its role was to protect the bit from the severe axial and lateral vibrations experienced on the previous assembly. The goal was to drill the 16" section shoe-to-shoe in one run, improve rate of penetration (ROP) and protect bit and bottom hole assembly (BHA)

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- The HI TOOL® was placed above the motor isolating the lower BHA, including a PDC bit, from upper string vibrations while maintaining verticality. The HI TOOL® was run as a second stabilization point above the motor to allow the PDC bit to sit evenly on the formation face, undisturbed by the string harmonics

Value to the client

- The HI TOOL® delivered on its objective, with significant improvements of axial and lateral shocks with lower orders of stick slip. The performance of the HI TOOL® allowed the operator to apply higher weight on bit and achieve a constant rate of penetration, which resulted in a record for the field with 40% improvement in ROP. The 4,718 ft section was drilled in a smooth manner with the bit graded 1-1 WT in re-runnable condition
- Reduction of lateral and axial vibrations
- Smoother drilling throughout section
- Improved bit life and condition reflected by even wear
- 40% improvement in ROP

Safety



Operational efficiency



Order	Component	Provider	Nominal Size	# Joints	OD Size	ID Size	Length
1	Bit	ULTR	16	1	16	0	1.46
2	Mud Motor	BHI	11.75	1	9.375	3	40.96
3	Harmonic Isolation Tool	EXPRO	15.875	1	9.5	3	5.35
4	Drillcollar	RIG	9.5	1	9.5	3	31.05
5	Stabilizer	BHI	15	1	9.5	3	6.89
6	Drillcollar	RIG	9.5	5	9.5	3	153.08
7	Crossover	RIG	9.5	1	9.5	3	2.51
8	Drillcollar	RIG	8.25	12	8.25	2.875	367.56
9	Hydraulic Jar	NOJ	9	1	9	2.875	30.44
10	Drillcollar	RIG	8.25	2	8.25	2.875	60.86
11	Rest of BHA	RIG	5.5	1	6.625	4.67	1

Formations Drilled

HITH	Anhydrite and Carbonates
ARAB	Limestone & Anhydrite interbeds w/ Dolomite
JUBL	Limestone
HNIF	Limestone
TQMN	Limestone
HURN	Limestone, Dolomite and Anhydrite

Well #	Bit Size	Drilling Sys	Depth In	Depth Out	Footage	ROP	Comments
ABC-500	16	Motor	330	5,161	4,831	36	No HI Tool, BH motor and Ultrera bit, finished in two runs, motor failure.
ABC-502	16	Motor	327	5,045	4,718	60	HI Tool utilized, BH motor and Ultrera ,one run, Record ROP, re-runnable bit.