SUCCESS STORY

6 7/8" Production Section: Curve + Lateral

BHA: RSS + Mud Motor + Mechanical Thruster

Alberta, Canada

Mechanical Thruster

The Mechanical Thruster provides consistent force to bit by balancing hydraulic and mechanical forces. This balance provides smooth energy transfer to the bit, even in erratic situations. By providing consistent parameters, the Mechanical Thruster reduces shock and vibration, BHA damage and failures.

Overview

An operator in Canada was seeking to succesfully drill a 6 7/8" curve and lateral section with RSS but was experiencing multiple downhole failures, mainly due to high shock and vibration. Three production sections were drilled with different vibration mitigation drilling tools.

Shocks Per Hour

54%

Decrease

Single Bit Run

172

Circulating Hours

Run Details

- 6 7/8" Hole Size
- PowerDrive Orbit RSS
- Mud Motor 7/8 - 8.4 stg
- Average section length of 5,100m
- MT6X-500 Single Acting Mechanical Thruster

Objective

To drill the production section in a single run and decrease shocks to avoid RSS and MWD damages.

Recommendation

Add the Mechanical Thruster to the BHA in between the MWD and the mud motor to assist with shock and vibration mitigation.

Configuration

5" MT3 Single Acting Mechanical Thruster with standard spring setting.

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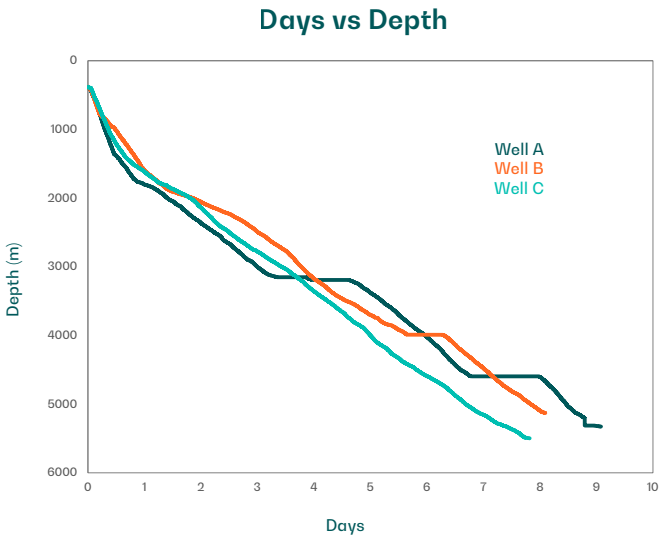
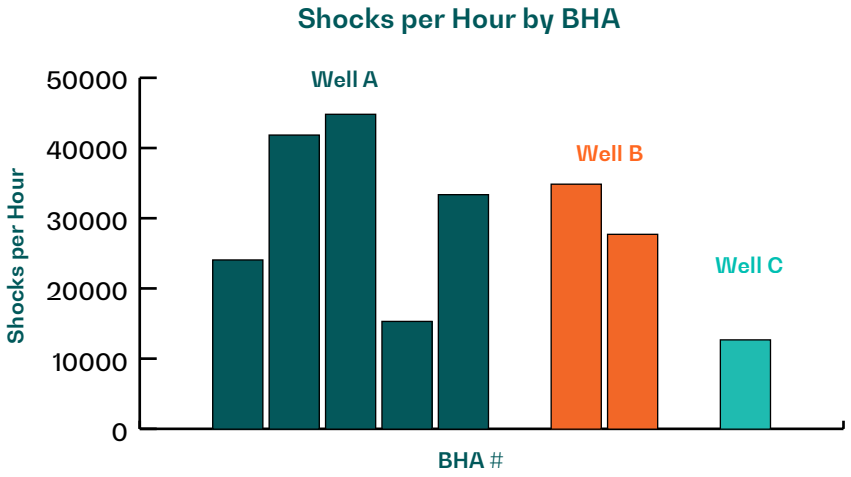
TAQA

Run Summary

Well A	**Competitor** The production section of Well A was drilled with a total of 5 BHAs.
Well B	**None** The production section of Well B was drilled with 2 BHAs. Run 1 had no vibration mitigation tool and run 2 had a Mechanical Thruster.
Well C	**Mechanical Thruster** The production section of Well C was drilled in a single run and a Mechanical Thruster was included below the mud motor.



Results



- The BHA with the Mechanical Thruster below the motor received the fewest number of shocks per hour.
- The maximum peak shocks the BHA received was lowest on the two BHAs with the Mechanical Thruster.
- The BHA with the Mechanical Thruster below the motor successfully drilled Well C in one run.

Well	BHA #	Vibration Mitigation Tool	Pumping Hours	Shocks per Hour	Max Shock (G)
A	1	Competitor	74.17	24,109	346
	2		49.47	41,828	330
	3		29.44	44,775	500
	4		71.09	15,388	624
	5		69.39	33,371	624
B	1	None	128.63	34,860	624
	2	Mechanical Thruster	46.61	27,744	281
C	1	Mechanical Thruster	172.06	12,762	283