

Drilling of Metamorphic Originated Rocks

Geothermal Field, West of Turkey

Mechanical Thruster

The Challenge

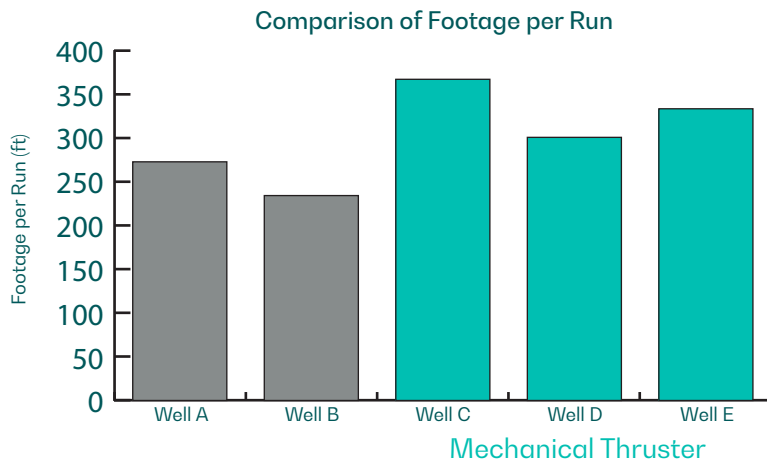
Drilling interbedded formations with metamorphic originated rocks in a geothermal field West of Turkey is challenging due to heterogeneous abrasive formations that cause severe shock and vibrations, leading BHA damage. The geothermal wells in this field have been drilled with unpredictable and unsustainable drilling parameters due to the ineffective weight transfer to bit and high vibration levels.

The Solution

A dual acting MT6 6.75" Mechanical Thruster was added to the BHA after considering the well profile, and downhole parameters. The tool was placed on top of the MWD collars.

Results

A total of 5 wells are included in the study, Wells A and B were drilled without the tool and Wells C, D and E were drilled with the Mechanical Thruster. The average footage/run and ROP with the Mechanical Thruster were 333.8m and 5.13 m/hr. Without the Mechanical Thruster the results were 253.6m and 3.88 m/hr respectively.



Run Overview

Hole Size	8.75"
Bit Type	Tri Cone
BHA	Motor + MWD
Well Profile	Vertical

The Mechanical Thruster provides a consistent force to the bit by balancing hydraulic and mechanical downhole forces. This balance provides smooth energy transfer to the bit.

By introducing the Mechanical Thruster to the BHA, the operator was able to achieve the following:

Avg ROP and footage
32% Increase



Cost Savings
~ \$100,000

