

Case Study Milling Optimization

Improved Milling Results with F5 Motor

Case Study No. 4401

DETAILS:

Location:	Northern British Columbia, Canada
Formation:	Montney
Casing Size:	139.7mm - 29.76 kg/m (5 1/2" 20#)
Conveyance:	73mm Coiled Tubing
Operation Depth:	Deepest Well 6275m (20,587')
Lateral Length:	3600m (11,811')
Well Orientation:	Horizontal
Fluid	Water Based
Operation Type:	Milling Composite Bridge Plugs
Tools Used:	Slimline Dimple CT Connector 79.4mm OD Dual Back Pressure Valve 79.4mm HydraSet Jar 79.4mm Hydraulic Disconnect 79.4mm Diverting Circulating Sub 79.4mm XRV™ Extended Reach Tool 79.4mm F5 Downhole Motor 95.3mm Ported Rotary Bit Sub 117.5mm JZ Sealed Bearing Bit

RESULTS:

The customer had a 10 well pad in Northern British Columbia needing a total of 144 composite bridge plugs milled out. Utilizing Thru Tubing Solution's Milling Assembly, TTS was able to complete all 10 wells with an average milling time of 35 min per plug. The key to success was the inclusion of TTS' XRV™ Extended Reach Tool which helped overcome the frictional forces in long laterals, which exceeded 3600m (11,811') on these wells. The use of TTS' F5 Downhole Motor in conjunction with the XRV™, left the milling operation smooth and predictable with only 15 stalls encountered over the entire project. It was assumed that restricted flow around the bit caused hydraulic lifting off the target resulting in decreased milling efficiency. Therefore, inserting a diverting sub below the motor helped to eliminate the negative effects of hydraulic forces at the bit face associated with large flow rates. By optimizing their milling operations with the use of TTS' Milling Assembly, the customer was able to reduce overall costs by decreasing time spent per well.

HIGHLIGHTS

- Completed a 10 Well Pad
- F5 Motor Excels in Long Laterals
- Average Milling Time of 35 min/plug
- Increased Flow Rates with Larger OD Tools
- Improved Annular Velocity and Debris Cleaning due to Larger Flow Rates



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