

# Milling Optimization

## Optimized 6BPM F5 Motor Completes Record Operation



### HIGHLIGHTS

- Milled thru 141 Plugs in a Single Run
- Average Milling Time of 17 min/plug
- Increased Flow Rates with Larger OD Tools
- Improved Annular Velocity and Debris Cleaning due to Larger Flow Rates

### DETAILS

Location	Washington County, PA
Formation	Marcellus
Casing Size	5 1/2" 20#
Well Orientation	Horizontal
Fluid	Fresh Water
Lateral Length	8,377 Ft
Total Measured Depth	15,812 Ft
Conveyance	2 7/8" Coiled Tubing
Operation Type	Drillout Composite Bridge Plugs
Tools Used	3-1/8" TTS Milling Assembly

### OBJECTIVE

One of the largest operators in the NE wanted to push the boundaries of tri-cone bits.

### RESULTS

Working with our in-house engineering team, TTS was able to rapidly modify the power section of our F5 downhole motor to operate with 6 BPM of flow which allowed for optimum well cleaning. This lower RPM motor was designed specifically for wells with a high number of bridge plugs where debris management is critical to the success of the job. The optimized motor design, in conjunction with a roller cone bit, successfully milled out 141 composite bridge plugs in a single run with an average mill time of 17 minutes; placing the motor in hole for 102 hours. During drill-out operations, the total volume and size of plug parts produced was sufficient in successfully reaching TD.

### VALUE TO CUSTOMER

This completion of 141 plugs in one run was a record for the customer and for TTS at the time of the operation.

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