



Case Study: Oklahoma, United States

## King™ Frac Plug – Improved Frac Reliability and Removed Efficiency Issues During Drill Out

### Challenge:

An operator running 5.5” Frac Plugs out in the Woodford was looking for a more reliable plug, better pump down efficiencies, and to improve their drill out efficiencies in some upcoming wells. Additionally, the operator was looking for ways to save cost by continuing to run frac plugs that have the option of running a ball-in-place and the ease of drill out in low-pressure environments.

### Solution:

The customer opted to install 93 King™ Frac Plugs using Royals Easy Connect WLAK and E4-#20 Setting Tool. The previous plug provider had multiple issue with their plugs slipping during frac while all 93 King™ Frac plugs held in place without any pressure losses. The wells were completed without incident, and all King™ Frac Plugs were drilled out with no short trips and drill out times averaging <5 min per plug. All plug debris from the plugs were small from start to finish.

### Well Specification

- 5.5” - 20 lb/ft Casing
- ~11,000 ft Lateral Length
- ~5,000 ft TVD
- ~9,500 psi Max Frac Pressure
- 160°F

### Results:

- No plugs slipped or leaked during frac
  - All 93 plugs run showed solid pressure integrity during frac
  - All 93 plugs were tagged in proper location during drill out
- Plugs pumped down more efficiently
  - Operator was able to pump down at 2-3 bbls less per plug while maintaining previous speed.
  - Total fluid saving was over 4,000 bbls of fluid
- Plug debris size was manageable
  - No short trips needed
  - Drill out times of <5 minutes per plug using a Tri-cone Bit



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