

Stronghold Barricade™ System

Permanent Caprock Integrity



The Industry Challenge

In plug & abandonment the main challenge is to set reliable barriers for eternity. The barriers need to have high performance hydraulic isolation. It is also crucial that the barriers can be set, verified and validated effectively.

Solution

The solution is the Stronghold Barricade System. By eliminating the need for milling, Archer's Stronghold™ systems deliver a step-change in efficiency and effectiveness for P&A and other technologies. Together with Tubing Conveyed Perforating (TCP) products and new charge development, Archer gives an efficient and safe execution of operations providing time and cost savings for our customers.

Result

A rock to rock full lateral barrier all in one trip. Enables the customers to provide high performance hydraulic isolation efficiently and reliably. Providing Permanent Caprock integrity.

Method

With the addition of the one-trip TCP (Tubing Conveyed Perforation) module, the Barricade is designed to wash and clean the annulus of a perforated casing or liner in a selected formation zone or between casings, then accurately place a permanent barrier.

A one-trip operation with the Barricade consists of:

- Perforating the section - at which point the guns drop automatically
- Thoroughly washing the perforated annular section
- Placing spacer fluid in the annulus using our calculated "Pump and Pull" method
- Placing the barrier material using the same technique.

After the annular cleaning phase, high-circulation rates and pipe rotation enhance debris removal from the washed annulus and out of the well.



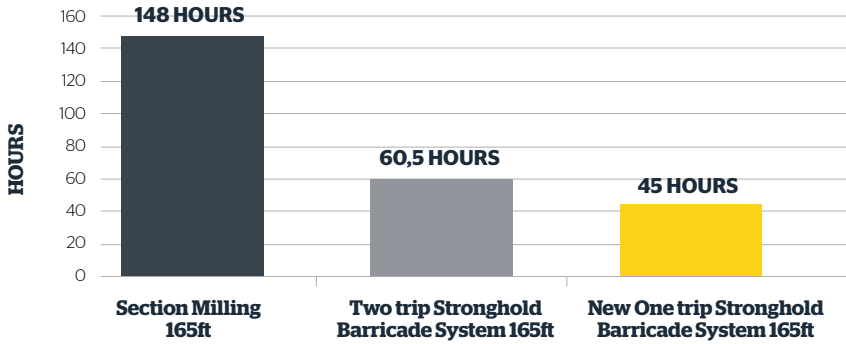
STRONGHOLD™
Permanent Caprock Integrity

Archer

Gaining Efficiency

- Section Milling is estimated at 148 hours
- The Two trip Stronghold Barricade took 60,5 hours
- The New One Trip Stronghold Barricade only takes 45 hours
- Improving efficiency by more than 50%

OPERATIONAL TIME



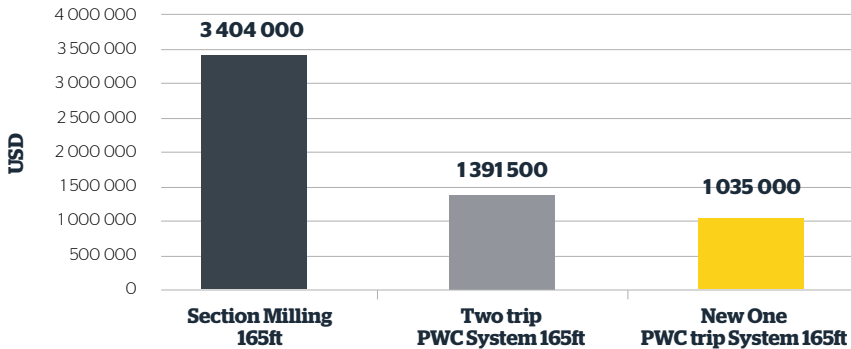
Features & Benefits

- No swarf and additional surface equipment
- No tubular handling, shipping and disposal
- Defined operational window based on logging results
- Single run system for setting cross sectional barrier
- Controlled washing with SPP as main performance indicator
- Excellent hole cleaning validated by CFD analyses
- Accurate placement of cement validated by both annulus pressure remediation and Cement Bond Logging
- Field proven in over 122 runs world wide

Saving Operational Cost

- Section Milling has an estimated operational cost of \$3,404,000
- The Two trip Stronghold Barricade had an operational cost of \$1,391,500
- The New One Trip Stronghold Barricade has an operational cost of \$1,035,000
- Operational cost per hour \$23,000

OPERATIONAL COST



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Total savings achieved for the technology is 200 rig days and 25M USD



Archer is a global oil services company with a heritage that stretches back over 40 years. With a strong focus on safety and delivering the highest quality products and services, Archer operates in 40 locations over 19 countries providing drilling services, well integrity & intervention, plug & abandonment and decommissioning to its upstream oil and gas clients. **We are Archer.**