

## High Rate Annular Coiled Tubing Fracturing

Montney Formation, Western Canadian Sedimentary Basin

## **CHALLENGE**

- Successfully place pinpoint fractures in the Lower Montney
- Exceed pumping pressures of 10,000 psi due to high fracture gradient
- Maximize proppant conductivity into the reservoir
- Successfully execute a single-entry slickwater fracturing operation
- Ensure complete wellbore drift post completion

## SOLUTION RESULTS

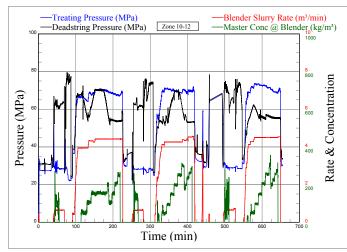
Calfrac has specifically designed surface equipment and operating procedures to complete a +6,000m annular fracturing operation beyond the previously defined 10,000 psi pressure limitation.

- Abrasively perforated each zone into the blank casing
- · Single pinpoint entry into the reservoir
- Confidence in location of sand and fluid placement
- Specifically designed coiled tubing strings for high rate and high pressure
- Treatment capabilities up to 85 MPa
- Calfrac CWS-600 Slickwater fluid system to effectively place conductive path

Calfrac completed the first true 15,000 psi annular Slickwater coiled tubing fracturing operation:

- Completed 25 stages throughout the lateral section
- Treated at an average pressure of 75 MPa and 4.5m³/min
- Successfully placed up to 350 kg/m³ of sand concentration and 60T per zone
- Hydrocarbon was propitiously produced back to surface after six (6) days of flowing
- Elevated water recovery and producing surface pressure as compared to alternate completion methods

## **ILLUSTRATION OF RESULTS**





High Rate Annular Coiled Tubing Fracturing Operation (2015,

Calfrac Well Services Photo

CALFRAC.COM OCTOBER 2015