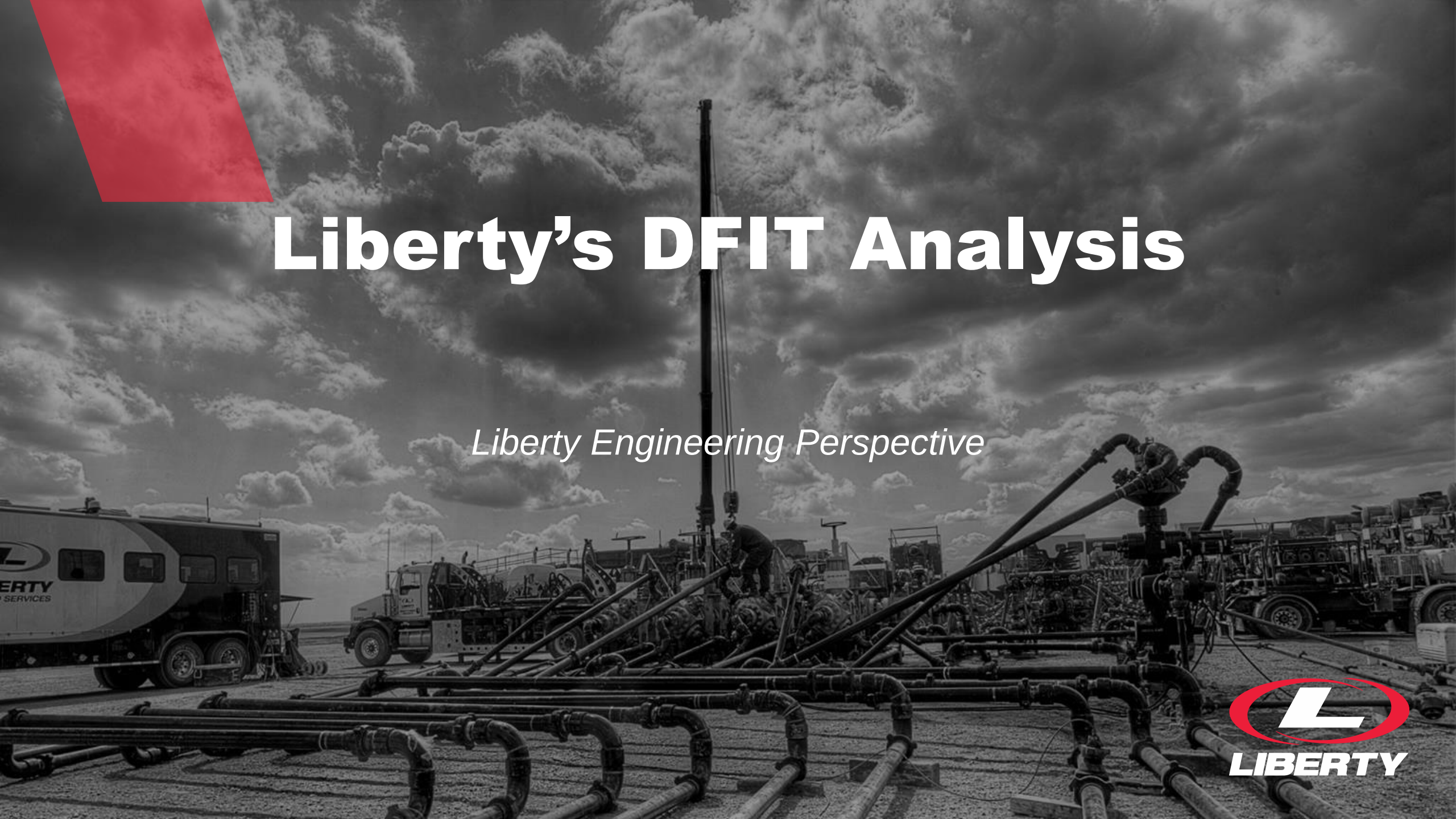
Liberty's DFIT Analysis

Liberty Engineering Perspective

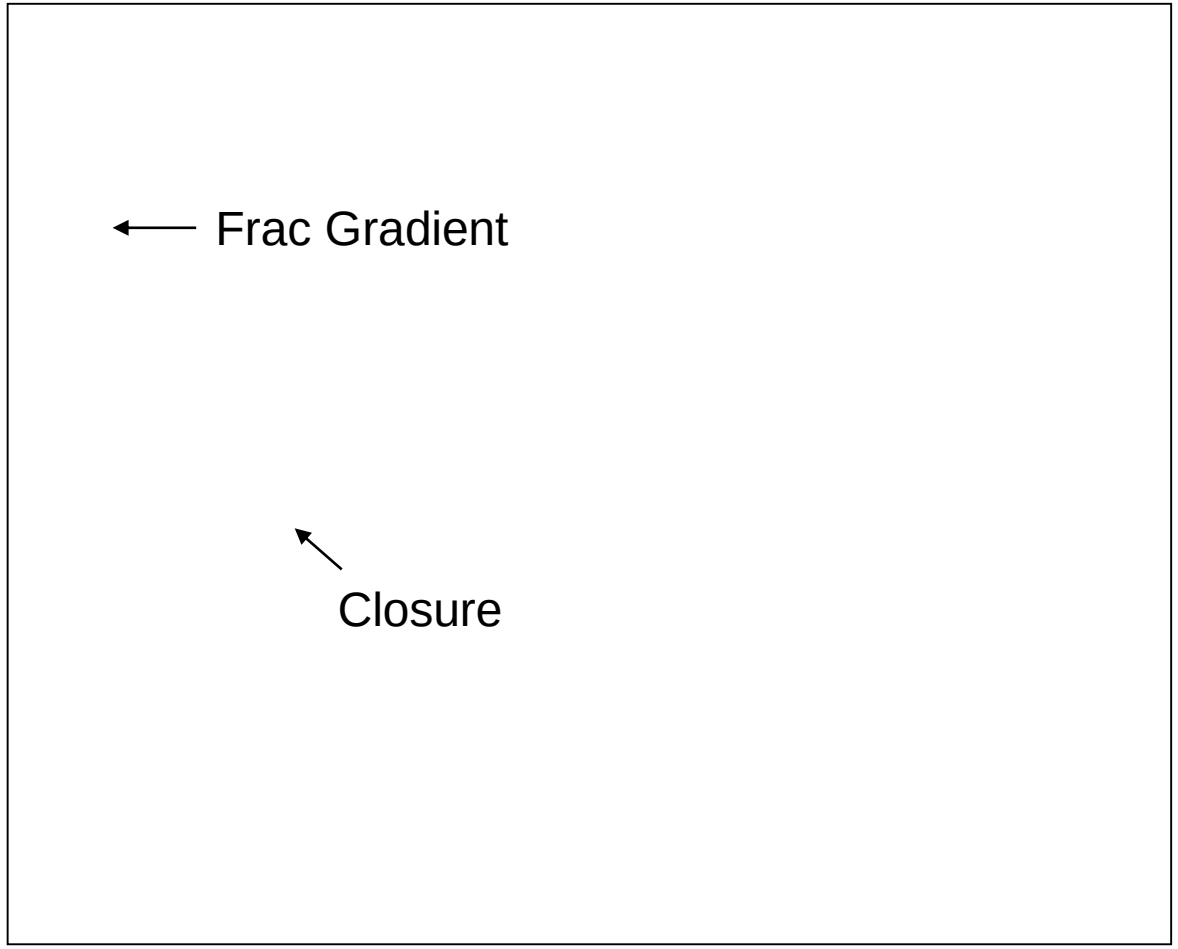


Liberty's DFIT Analysis

- Estimate important fracture and reservoir parameters:
  - Fracture gradient
  - Closure stress
  - Leakoff type (e.g. presence of natural fracs)
  - Reservoir pressure
  - Permeability (or kh)
- Analysis performed in Fracpro

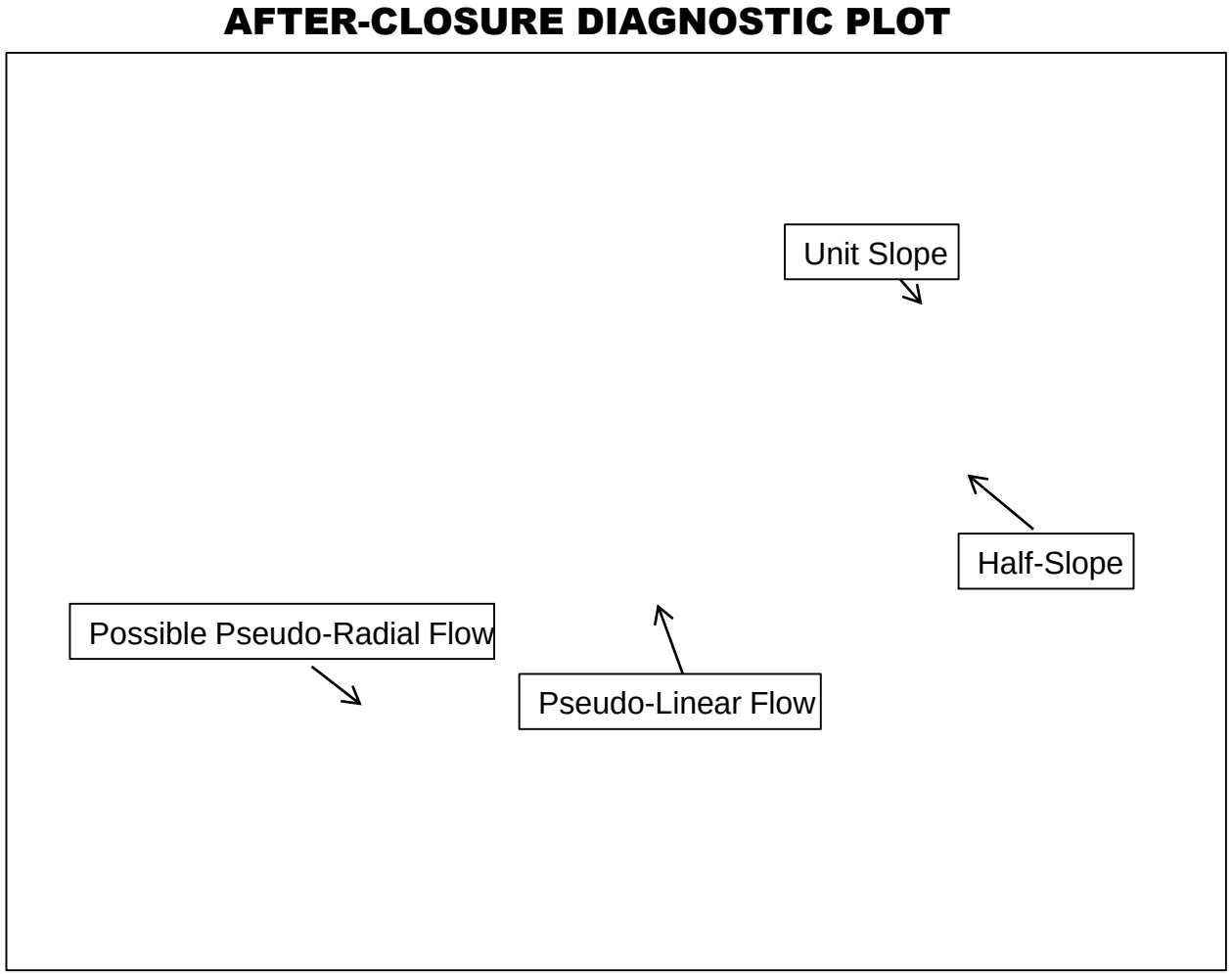
Liberty's DFIT Analysis

Step 1: Estimate Frac Gradient and Closure Stress (G-Function Analysis after Nolte et al. and Barree et al.)



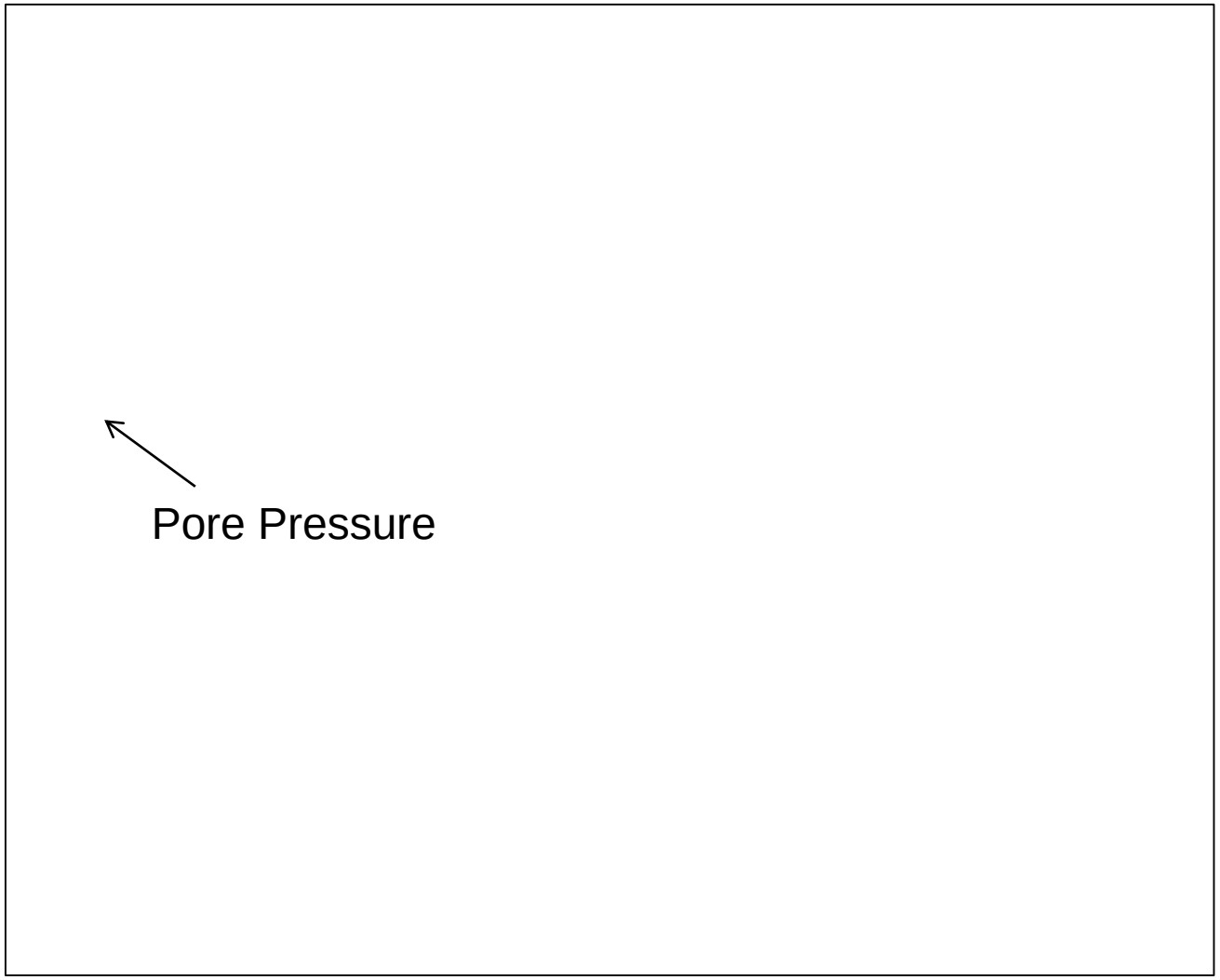
Liberty's DFIT Analysis

Step 2: Determine when after-closure pseudo-linear flow occurs (in rare cases pseudo-radial).



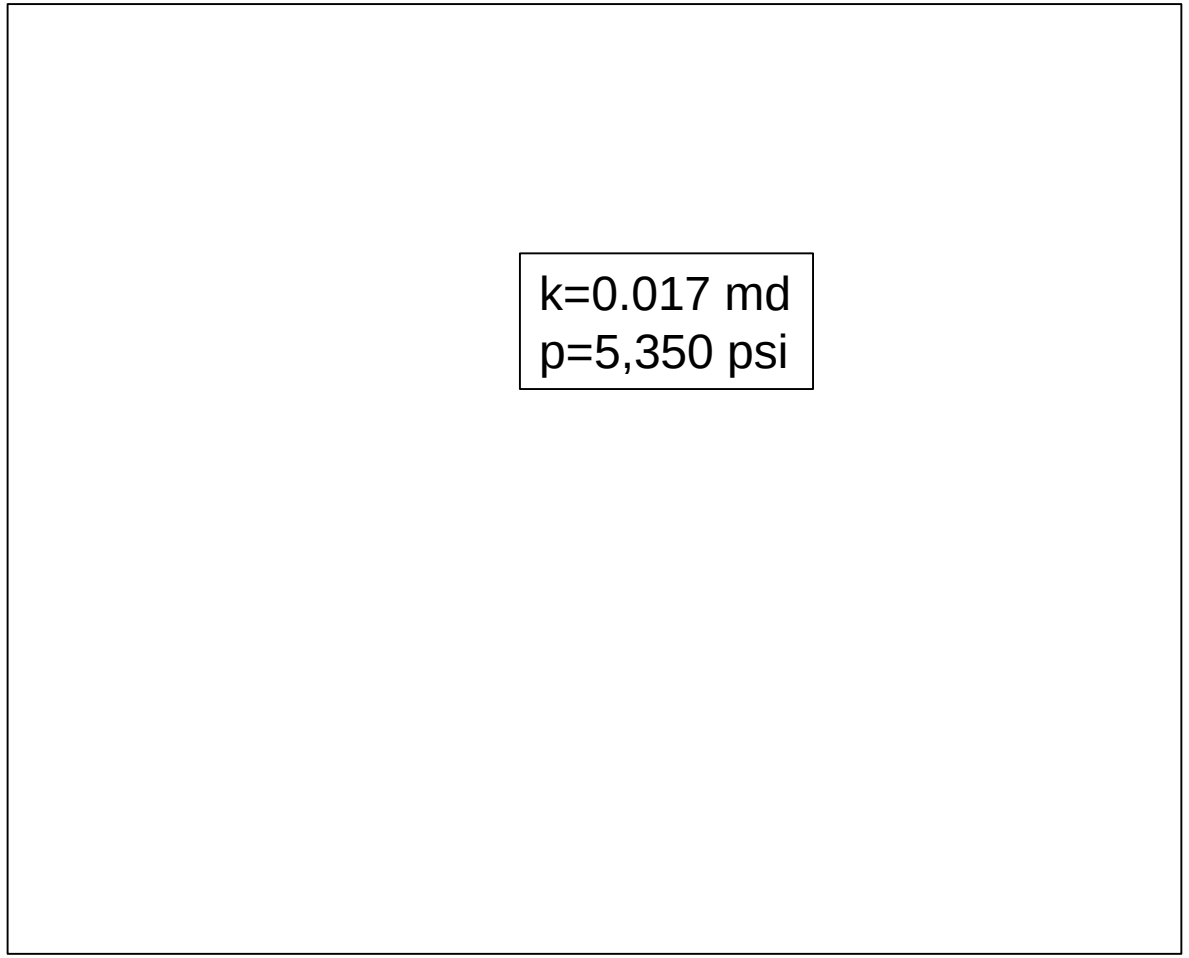
Liberty's DFIT Analysis

Step 3: Once PLF region identified estimate pore pressure from linear plot similar to Horner plot



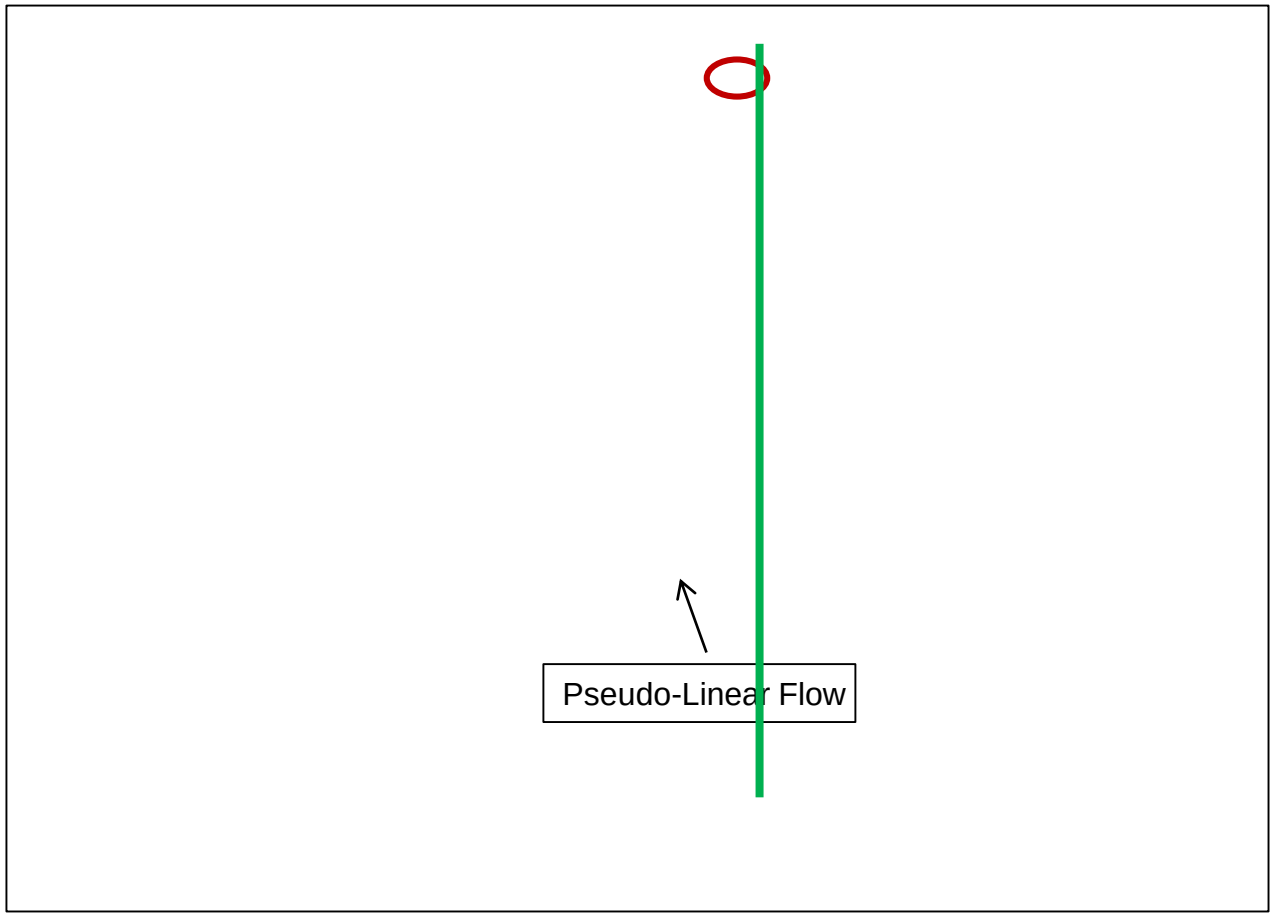
Liberty's DFIT Analysis

Step 4: Before-closure estimate of reservoir permeability (Mayerhofer Method) and reservoir pressure, which should roughly match Step 3 estimated reservoir pressure (PLF extrapolation)



Liberty's DFIT Analysis

Step 5: Use before-closure permeability estimate to predict start of observed PLF in after-closure data (iterative process with Step 4)



Permeability analysis is completed when:

- Before-closure model matches actual pressure data and pore pressure from PLF analysis
- Before closure estimates are consistent with after-closure estimates

LIBERTYFRAC.COM