Example :

10/19/23

$B = 1.06$ RB/STB

$q = 519$ STB/day

$\mu = 0.92$ cp

$\phi = 22.3\%$

$c_t = 13 \times 10^{-6}$ psi^{-1}

$h = 13$ ft

$r_w = 0.27$ ft

Drawdown Test

$$m = -\frac{162.6\,q\mu B}{Kh}$$

$$\rightarrow K = -\frac{162.6\,q\mu B}{mh}$$

$$P_{wf}(t) = -6.9 \ln(t) + 3568.9$$

$$= -6.9 \frac{\log t}{\log e} + 3568.9$$

$$= \underbrace{-15.9}_{m} \log t + 3569.9$$

$$\Rightarrow \boxed{K_d = 397.96 \text{ md}}$$

$S_{drawdown} = 9.218 > 0$

↳ Damaged

Buildup Test

$$P_{ws} = -6.69 \ln\left(\frac{t+\Delta t}{\Delta t}\right) + 3793$$

$$= -15.408 \log\left(\frac{t+\Delta t}{\Delta t}\right) + 3793$$

$$k = -\frac{162.6 \times 1.06 \times 0.92 \times 519}{-15.408 \times 13}$$

$$\rightarrow \boxed{k \simeq 410.86 \text{ md}}$$

$S_{Buildup} = 9.824 > 0 \Rightarrow$ Damaged

$C_{Drawdown} = 0.1575$ RB/psi

$C_{Buildup} = 0.1862$ RB/psi

$C_{D,\,Drawdown} = 51230.8$

$C_{D,\,Buildup} = 60566.2$