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Item 1: Sheets of formulae (pink sheet for oil, yellow sheet for gas)

Type Curves:

Item 2: Uniform Flux Vert. Frac: Log-Log: Pressure Scale 2 Cycles

Item 3: Uniform Flux Vert. Frac: Semi-Log: Pressure Scale 0 to 4.5

Item 4: Uniform Flux Vert. Frac: Semi-Log: Pressure Scale 0 to 2.25

All graphs in this section constant pressure at boundary only.

For oil:

$$m = \frac{1.151 \ \Delta P}{P_D}$$

$$P_D = \frac{1.151 \ \Delta P}{m}$$

$$= \frac{7.08 \ \Delta P}{q \ \mu \ B} \ Kh$$

$$Kh = \frac{q \ u \ B}{7.08} \quad \frac{P_D}{\Delta P} \qquad\qquad \frac{Kh}{\mu} = \frac{q \ B}{7.08} \quad \frac{P_D}{\Delta P}$$

$$\eta = \frac{6.328 \ K}{c \ \mu \ \phi}$$

$$m = \frac{q \ \mu \ b}{6.15 \ Kh}$$

q = BOPD

μ = c p

B = RB/STB

K = darcys

h = feet

C = $\Delta V/V/psi$

X_f = fracture half-length

X_e = distance to outer boundary

t = days

For gas:

Q = MCF/D at 14.7 psia P.B.

μ = cp

K = darcys

T = ^{o}R

h = feet

μ_i = cp at 14.7 psia and reservoir temp.

$$m = \frac{1.151 \Delta P}{P_D}$$

P_e = external pressure

P_w = well pressure

$$Kh = \frac{1.637\ Q\ \mu_i\ T}{m}$$

$$= \frac{1000\ Q\ \mu_i \left(\frac{T}{610.9}\right)}{m}$$

Where ΔP is: $P_e^{\,2} - P_w^{\,2}$

and P_e and P_w are psia

or pseudo-pressures where pseudo-pressure is:

$$\left[2 \int_0^P \left(\frac{P}{Z \frac{\mu}{\mu_i}} \right) dP \right]^{1/2}$$

or

$$Kh = \frac{1.637\ Q\ T}{m}$$

if pseudo pressure is $\psi \left(\frac{psia^2}{cp}\right)$