EQUATIONS FOR DST LIQUID WELL ANALYSIS

Transmissibility $\quad \dfrac{kh}{\mu} = \dfrac{162.6\,QB}{m} \qquad\qquad \dfrac{md\text{-}ft}{cp}$

Indicated Flow Capacity $\quad kh = \dfrac{kh}{\mu}\,\mu \qquad\qquad md\text{-}ft$

Average Effective Permeability $\quad k = \dfrac{kh}{h} \qquad\qquad md$

Skin Factor $\quad S = 1.151\left[\dfrac{P^{*}\text{-}P_f}{m} - LOG\left(\dfrac{k\,(t/60)}{\phi\,\mu\,c_t r_w^{\,2}}\right) + 3.23\right]$

Damage Ratio $\quad DR = \dfrac{P^{*} - P_f}{P^{*} - P_f - 0.87\,mS}$

Theoretical Potential w/Damage Removed $\quad Q_t = Q\,DR \qquad\qquad BPD$

Approx. Radius of Investigation $\quad r_i = 0.032\sqrt{\dfrac{k\,(t/60)}{\phi\mu c_t}} \qquad\qquad ft$

EQUATIONS FOR DST GAS WELL ANALYSIS

Indicated Flow Capacity $\quad kh = \dfrac{.001637\,Q_g\,T}{m} \qquad\qquad md\text{-}ft$

Average Effective Permeability $\quad k = \dfrac{kh}{h} \qquad\qquad md$

Skin Factor $\quad S = 1.151\left[\dfrac{m(P^{*})\text{-}m(P_f)}{m} - LOG\left(\dfrac{k\,(t/60)}{\phi\,\mu\,c_t r_w^{\,2}}\right) + 3.23\right]$

Damage Ratio $\quad DR = \dfrac{m(P^{*}) - m(P_f)}{m(P^{*}) - m(P_f) - 0.87\,mS}$

Indicated Flow Rate (Maximum) $\quad AOF_1 = \dfrac{Q_g\,m(P^{*})}{m(P^{*}) - m(P_f)} \qquad\qquad MCFD$

Indicated Flow Rate (Minimum) $\quad AOF_2 = Q_g\sqrt{\dfrac{m(P^{*})}{m(P^{*}) - m(P_f)}} \qquad\qquad MCFD$

Approx. Radius of Investigation $\quad r_i = 0.032\sqrt{\dfrac{k\,(t/60)}{\phi\,\mu\,c_t}} \qquad\qquad ft$