

B0i = 1 STB

$$\Delta V_g(p) = \underbrace{(R_{si} - R_s(p))}_{\substack{\text{Liberated} \\ \text{Gas} \\ \text{scf} \\ \text{Sm}^3}} B_{gd}$$

$$\Delta V_{og} = r_s(p) (R_{si} - R_s(p)) = r_s(p) \Delta V_g \frac{1}{B_{gd}(p)}$$

condensate $\frac{\text{STB}}{\text{scf}} \frac{V_{og}}{V_{gg}}$

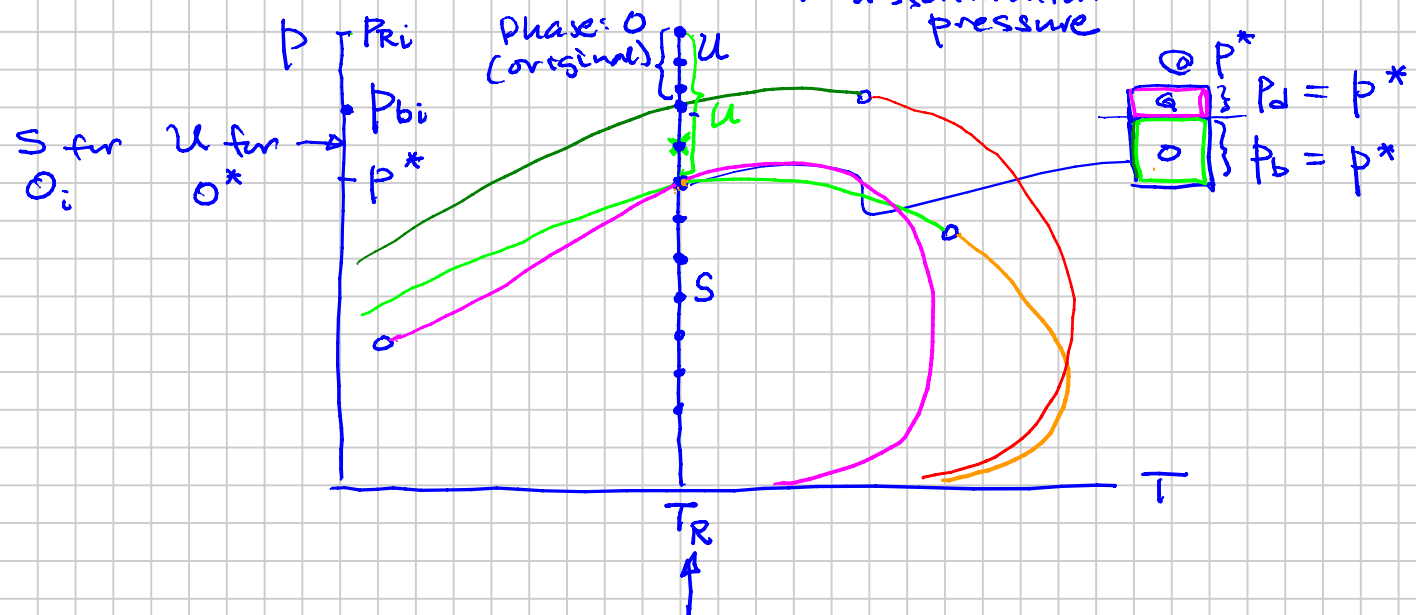
Black Oil PVT Properties

vary w/ pressure @ $T = \text{const}$

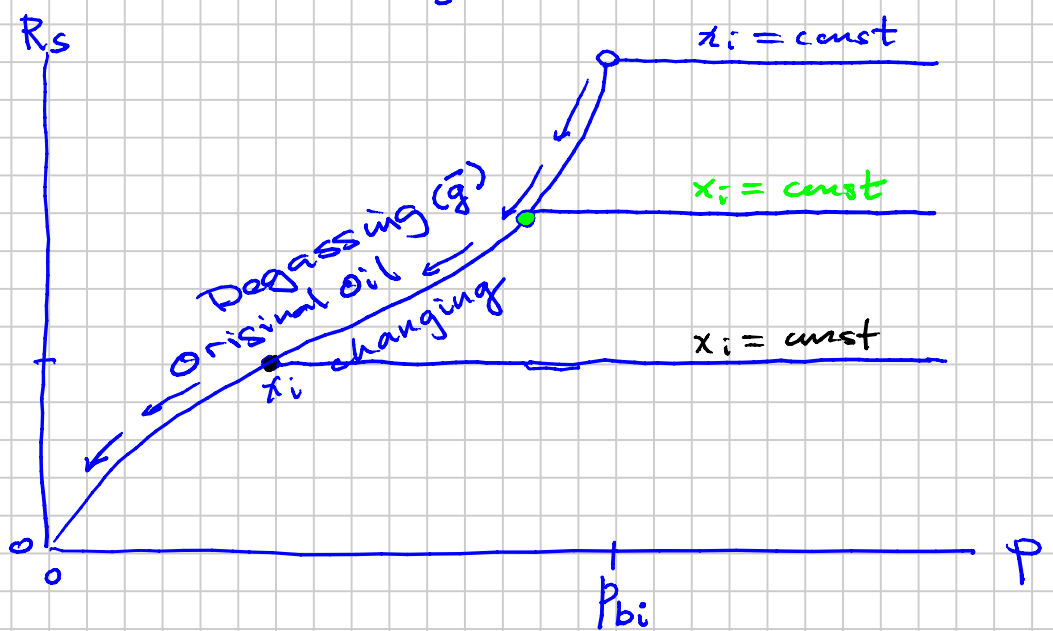
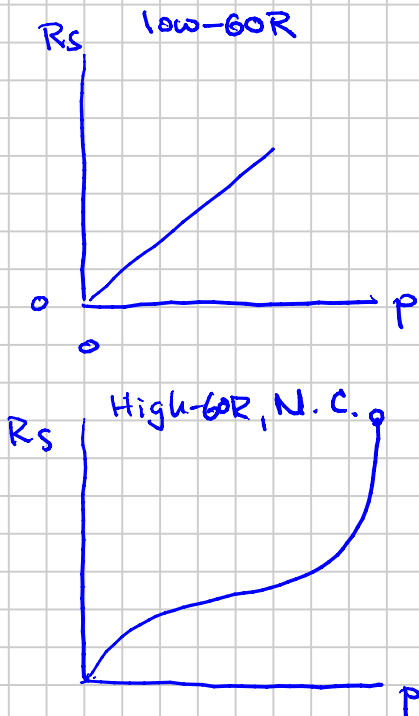
OIL: R_s B_o μ_o

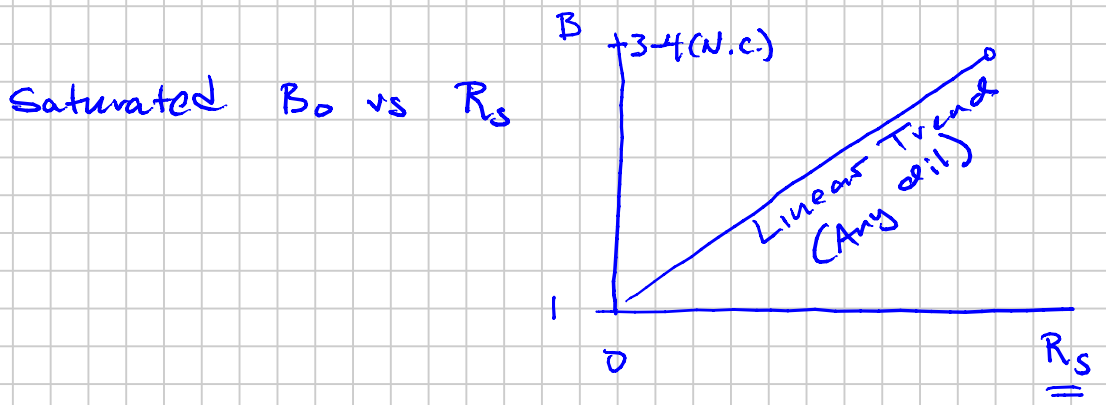
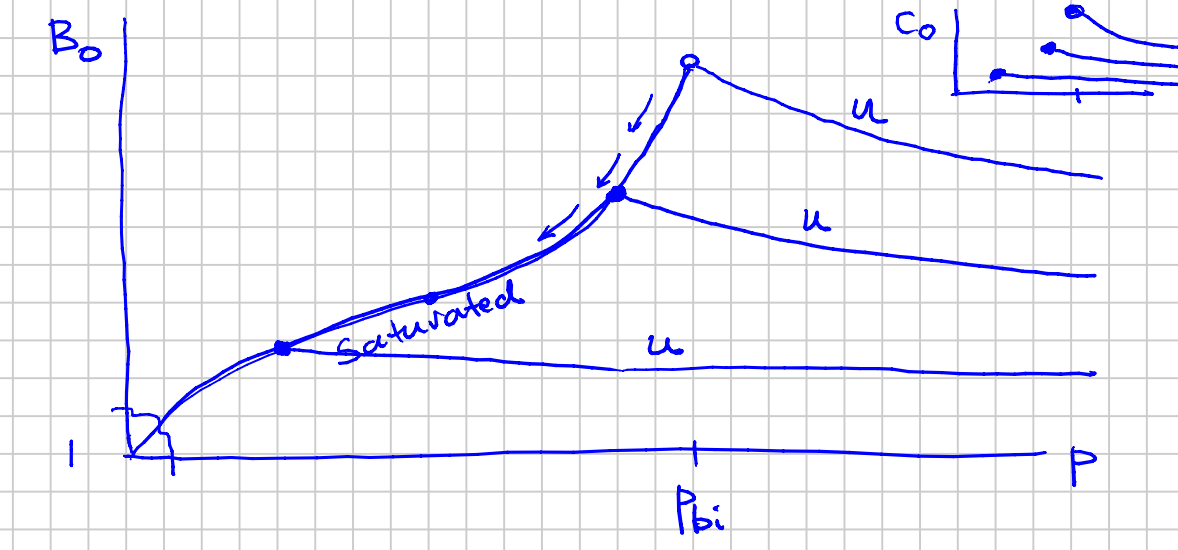
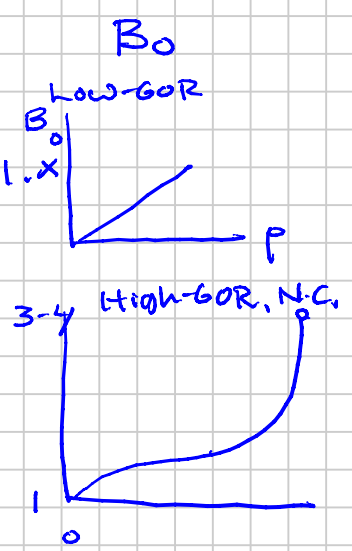
GAS: T_s B_{gd} μ_g

Saturated & Undersaturated
 • "2-phases"
 • phase is at its saturation pressure
 phase is @ $p > p_s$



OIL PHASE B_o PUT: R_s B_o μ_o
 (x_i) (V_o, P_o)

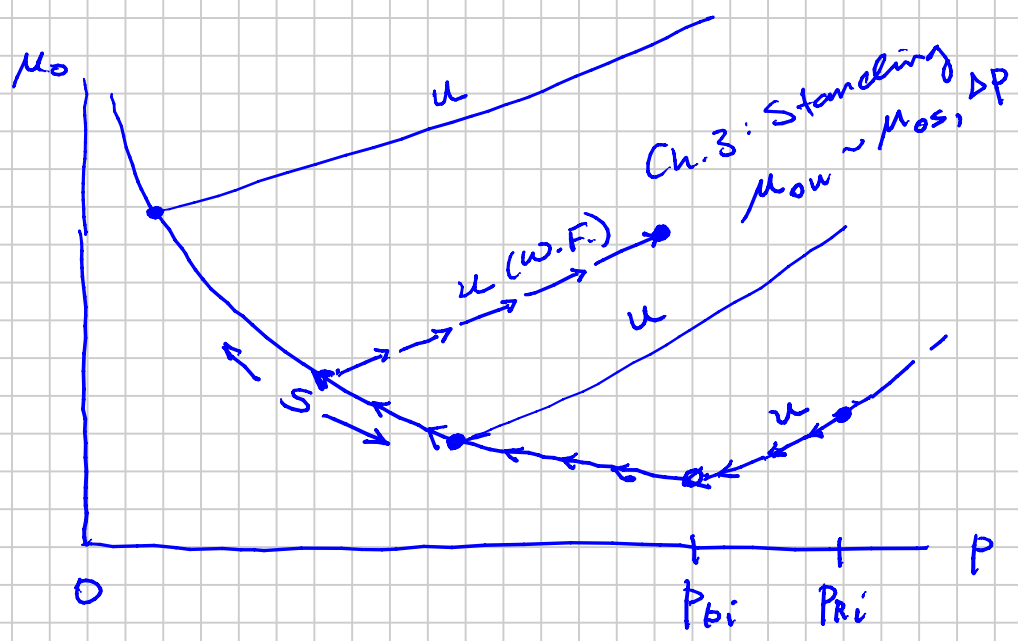




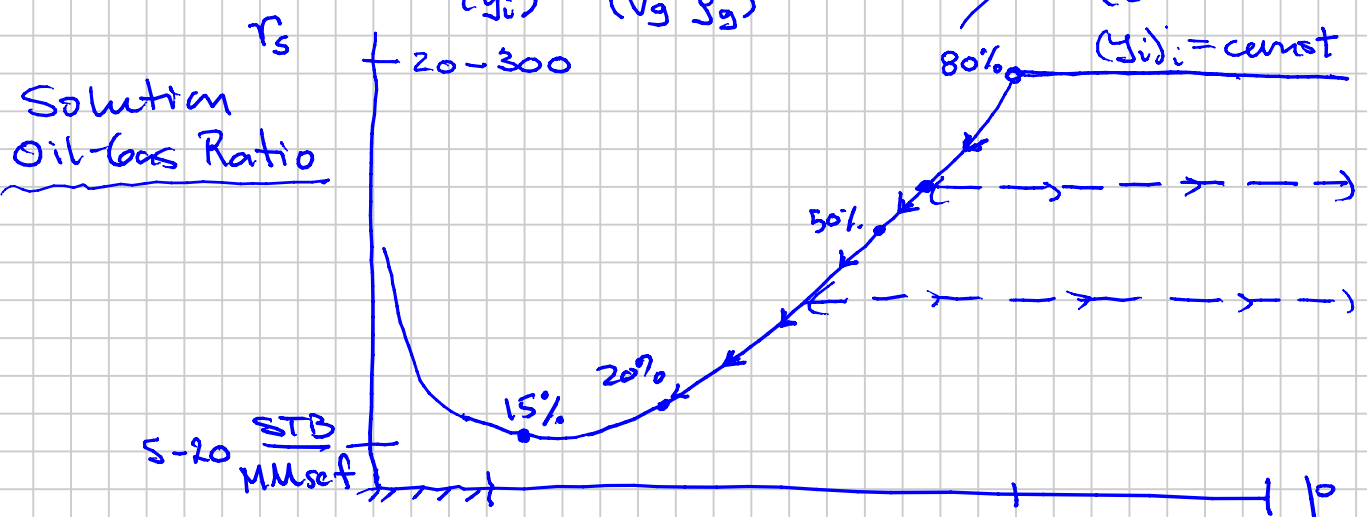
$\mu_o \propto \rho_o^{n \sim 3-4}$

$\rho_o \propto \frac{1}{B_o}$

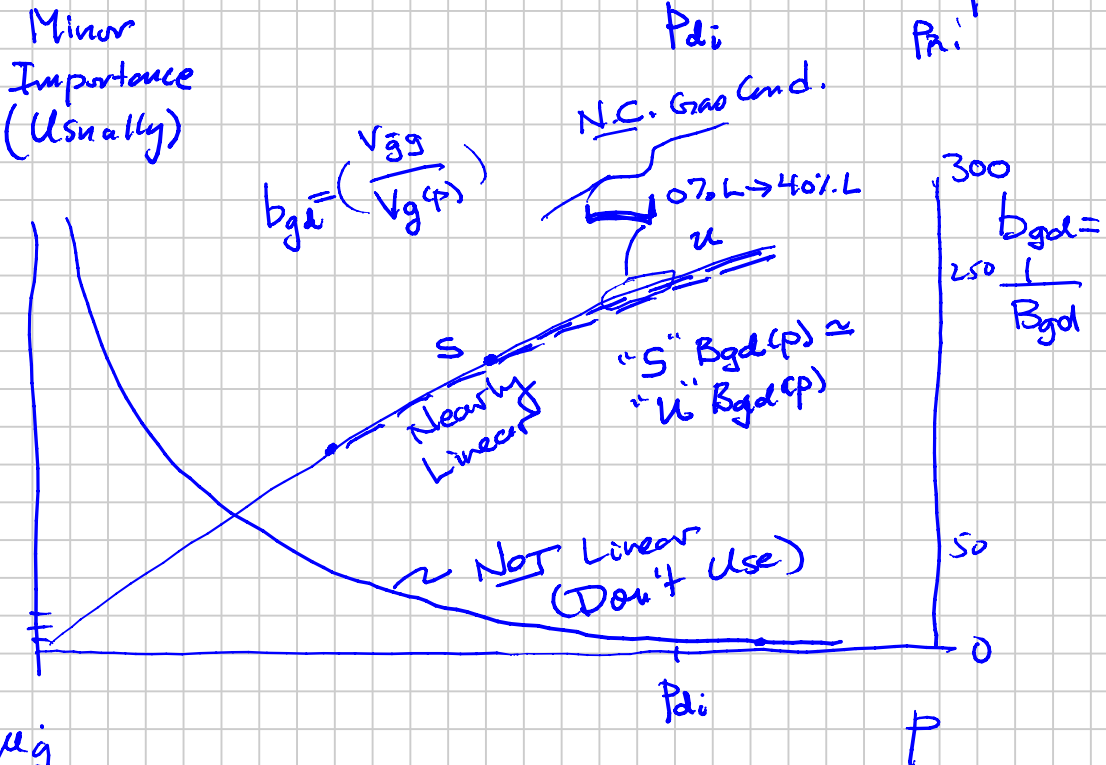
$\mu_o \sim \left(\frac{1}{B_o}\right)^n$



GAS BO PVT



$B_{gd} \propto \frac{1}{p}$



$\mu_g \propto \rho_g^m \propto b_g$

