STGIP @model

@wikipedia

Volumetric value of Gas In Place (GIP) recalculated to NTP conditions:

(1) $$V_{\text{STGIIP}} = \int_{\Omega} \left[\frac{s_g(\mathbf{r})}{B_g} + \frac{R_s\, s_o(\mathbf{r})}{B_o} \right] \phi_e(\mathbf{r}) dV$$

where

Ω	Petroleum reservoir
$\mathbf{r} = (x, y, z)$	Position vector to some location in a reservoir
$dV = dx\, dy\, dz$	Volume element of a reservoir
$p_i(\mathbf{r}),\ T_i(\mathbf{r})$	Initial formation pressure and temperature at location $\mathbf{r}$
$\phi_e(\mathbf{r})$	Effective porosity at location $\mathbf{r}$
$s_o(\mathbf{r}),\ s_g(\mathbf{r})$	Current Oil saturation and Gas saturation at location $\mathbf{r}$
$B_o(p_i, T_i),\ B_g(p_i, T_i)$	Oil FVF and Gas FVF at Initial formation pressure and temperature
$R_s(p_i, T_i),\ R_v(p_i, T_i)$	Solution GOR and Vaporized Oil Ratio at Initial formation pressure and temperature

For practical implementation of (1) one needs to build a Dynamic Flow Model (DFM) and perform a numerical integration.

See Also

Petroleum Industry / Upstream / Subsurface E&P Disciplines / Petroleum Geology / Petroleum Reservoir / Hydrocarbon In Place (HCIP) / Gas In Place (GIP) / Stock-Tank Gas In-Place (STGIP)