

Multilayer Pressure Interference Test @ model

The pressure interference test with multiple homogeneous layers staying in a permeable contact with each other will honour the following equations:

$$(1) \quad \langle \sigma \rangle = \sum_m \sigma_m$$

$$(2) \quad \langle c_t \phi h A \rangle = \sum_m c_{tm} \phi_m h_m A_m$$

where

| | |
|---|--|
| m | number of layers |
| $\langle \sigma \rangle$ | transmissibility of the multilayer system |
| $\langle c_t \phi h A \rangle$ | total reservoir storage of the multilayer system |
| A_m | reservoir drainage area of the m -th layer |
| $\sigma_m = M_m h_m$ | transmissibility of the m -th layer |
| h_m | reservoir thickness of the m -th layer |
| $M_m = k_m M_{rm}$ | reservoir fluid mobility of the m -th layer |
| $M_{rm} = \left\langle \frac{k_r}{\mu} \right\rangle_m$ | relative reservoir fluid mobility of the m -th layer |
| k_m | absolute permeability to air of the m -th layer |
| ϕ_m | reservoir porosity of the m -th layer |
| c_{tm} | total compressibility of the m -th layer |

The equations (1) and (2) define the 3D 2D upscaling algorithm for pressure calculations.

See Also

[Petroleum Industry](#) / [Upstream](#) / [Subsurface E&P Disciplines](#) / [Well Testing](#) / [Pressure Testing](#) / [Pressure Interference Test \(PIT\)](#)