

2-phase Oil + Water fluid model

2-phase fluid model based on three pseudo-components $C = \{O, G, W\}$:

O	dead oil pseudo-component
G	dry gas pseudo-component
W	water pseudo-component, which may include minerals (assuming formation water and injection water composition is the same)

existing in two possible phases $\alpha = \{o, w\}$:

o	oil phase, consisting of dead oil pseudo-component and dissolved natural gas pseudo-component (called solution gas)
w	water phase, consisting of water component only

The model is pertinent to Dead Oil or a Live Oil staying above bubble point.

The volumetric phase-balance equations is:

(1) $s_o + s_w = 1$

where

$s_o = \frac{V_o}{V}$	share of total fluid volume V occupied by oil phase V_o
$s_w = \frac{V_w}{V}$	share of total fluid volume V occupied by water phase V_w

The accountable cross-phase exchanges are illustrated in the table below:

	w	o
W	x	
O		x
G		x

It's a typical case for undersaturated reservoir.

See Also

