# Richardson and Shaw IPR @ model

A specific IPR model:

(1) $$\frac{q_O}{q_{O,\max}} = 1 - a\,\frac{p_{wf}}{p_r} - (1-a)\left(\frac{p_{wf}}{p_r}\right)^2 \quad , \quad p_b > p_r > p_{wf}, \quad \{0 < a < 1\}$$

where

| | |
|---|---|
| $q_O$ | surface production rate of rate |
| $q_{O,\max}$ | Absolute Open Flow (AOF) for oil |
| $p_{wf}$ | bottom-hole pressure (BHP) |
| $p_r$ | drainarea formation pressure |
| $p_b$ | bubble-point pressure |
| $a$ | model parameter $\{0 < a < 1\}$ |

This is a generalisation of Vogel model and reduces to Vogel model for $a = 0.2$.

It also goes as a partial case of the Wiggins IPR @ model with $\{a_1 = a,\, a_2 = 1 - a,\, a_k = 0, \forall k > 2\}$

## See also

Petroleum Industry / Upstream / Production / Subsurface Production / Subsurface E&P Disciplines / Field Study & Modelling / Production Analysis / Productivity Diagnostics / Inflow Performance Relation (IPR)

[ Vogel IPR @model ] [ Richardson and Shaw IPR @ model ] [ Wiggins IPR @ model ][ LIT IPR @ model ][ PADE IPR @ model ]

## References


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