Logarithmic Derivative = p'

Synonym: Logarithmic Derivative = Log Derivative

Derivative with respect to the natural logarithm of the argument (see **Fig. 1**):

(1) $$\frac{dp}{d(\ln t)} = t\,\frac{dp}{dt}$$

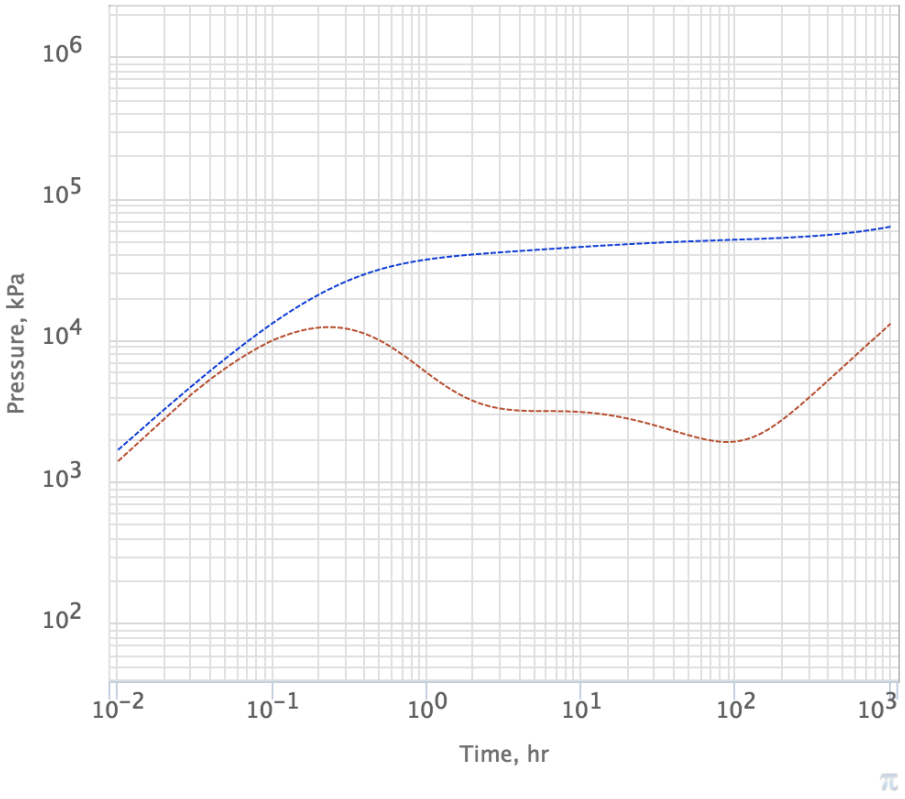

Fig. 1. Example of log-derivative P' (in red) along with pressure drop P (in blue) for a typical DTR presented on PTA type-library log-log plot

The calculation algorithm of logarithmic derivative is brought in Logarithmic Derivative @model.

In Well Testing applications the logarithmic derivative is often denoted as $p' = t\,\frac{dp}{dt}$ which is misnomer as the usual mathematical convention for prime " ' " is the regular Derivative with respect to the argument $p' = \frac{dp}{dt}$.

See also

Formal science / Mathematics / Calculus

[Logarithmic Derivative @model]

Petroleum Industry / Upstream / Subsurface E&P Disciplines / Well Testing / Pressure Testing / Pressure Transient Analysis (PTA) / PTA Diagnostic Plot

[Well & Reservoir Surveillance] [Pressure Diffusion] [Pressure log-log plot]