

Advances in Oil and Gas Exploration & Production

Troyee Dasgupta
Soumyajit Mukherjee

Sediment Compaction and Applications in Petroleum Geoscience

Advances in Oil and Gas Exploration & Production

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 Springer

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Troyee Dasgupta dedicates this book to her daughter “Rahini Dasgupta, born on 31-Jan-2017”.

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Symbols

Φ	Porosity
Φ_0	Average surface porosity of the surface clays
c	A constant
z	Burial depth
ρ_h	Hydrostatic pressure
γ_w	Specific weight of water
h	Height of column of water
G_h	Hydrostatic pressure gradient
P	Pore pressure
σ_v	Overburden stress
σ_e	Effective stress
α	Biot's effective stress coefficient
R_n	Resistivity normal trend
R	Resistivity log
X	Normal compaction trend
Δt	Interval transit time
Δt_n	Interval transit time normal trend
Y	Pore pressure gradient
P_f	Formation fluid pressure
α_v	Normal overburden stress gradient
β	Normal fluid pressure gradient
Z	Depth
Δt	Sonic transit time
A, B	Parameters
P_B	Pore pressure
σ_A	Effective stress at A
P_{NA}	Hydrostatic normal pore pressure at point A
OB_B	Overburden pressure at point B
OB_A	Overburden pressure at point A
σ_M	Mean effective stress
σ	Vertical effective stress

σ_h	Minimum horizontal stress
σ_H	Maximum horizontal effective stress
V	Sonic velocity
V_{\min}	Minimum sonic velocity of the rock matrix
V_{\max}	Maximum sonic velocity of the rock matrix
Σ	Vertical effective stress
P	Pore pressure
ρ_{\max}	Maximum matrix density
ρ_f	Fluid density
Δt_f	Interval transit time of fluid
Δt_n	Interval transit time for the normal pressure in shales
Δt	Transit time of shale
V_p	Compressional wave velocity
V_{ml}	Mudline velocity
U	Parameter representing uplift of the sediments
σ_{\max}	Effective stress
v	Velocity
V_m	Sonic interval velocity with the shale matrix
a_m	Ratio of the loading and unloading velocities in the effective stress curves
V_{\max}	Velocity at the start of unloading
P_{ulo}	Pore pressure due to unloading
\emptyset_{RHOB}	Porosity from density log
ρ_{ma}	Matrix density
ρ_b	Bulk density measured by log
ρ_{fi}	Fluid density
Δt_{ma}	Interval transit time of the matrix
Δt_{fi}	Fluid transit time
Δt	Average interval transit time from log
\emptyset_{DT}	Porosity from sonic log
\emptyset_{RILD}	Porosity from resistivity log
R_w	Formation water resistivity
n	Saturation exponent
m	Cementation exponent
R_t	True resistivity of the formation
t_{ma}	Sonic transit time of the rock matrix
ϕ_z	Porosity at depth z
ϕ_0	Porosity at the surface
b	A constant
Δt	Transit time measured by the sonic log

Δt_0	Transit time at the present sedimentary surface
c	Compaction coefficient
z	Burial depth
Δt_0	Transit time near to the transit time of water