

Appendix D: Symbols Used in Well Logging

Many of these symbols are used as subscripts.

<i>a</i>	Activity, air, apparent, atmospheric
<i>A</i>	Area, areal, atomic weight
<i>b</i>	Bubble point, bulk, burned
<i>B</i>	Background
<i>c</i>	Capillary, casing (pressure), contact, conversion, compressibility, corrected, critical, electro-chemical
<i>C</i>	Concentration, conductivity, salinity concentration, specific heat
CEC	Cation exchange capacity
<i>d</i>	Depletion, dew point, diameter, differential separation, dip, displaced, drainage
<i>D</i>	Deliverability, depth, diffusion coefficient, displacement
<i>e</i>	Effective, electronic charge, equivalent, external boundary conditions, extrapolated, influx rate, natural logarithm base
<i>E</i>	Elastic (Young's) modulus, electric field strength, energy, environmental factor (NMR)
<i>f</i>	Coefficient of friction, fluid, formation, fraction, frequency, fugacity
<i>F</i>	Force, formation resistivity factor= R_o/R_w , free
FFI	Free fluid index
<i>g</i>	gradient, gas, gravitational acceleration
Δg	Gravity anomaly
<i>G</i>	Geometric factor, geothermal gradient, gravitational constant
<i>h</i>	Hole, hydraulic head (pressure), hydrocarbons, thermal heat, thickness
<i>H</i>	Enthalpy, entropy, hard window, magnetic field strength
<i>i</i>	Index, initial, injected, injection rate, invaded zone, irreducible, $\sqrt{-T}$
<i>I</i>	Electric current, injectivity, invasion
<i>j</i>	Index, $\sqrt{-T}$
<i>J</i>	Count rate, electric current density
<i>k</i>	Electrokinetic, index, permeability, propagation factor, thermal conductivity, wavenumber
<i>K</i>	Bulk modulus
<i>l</i>	Distance, length
Δl	Distance between measurements
<i>L</i>	Length, liquid, lithology factor, spacing
<i>m</i>	Cementation exponent, index, magnetic moment, mass, mean, mud
<i>ma</i>	Solid matrix
<i>mc</i>	Mud cake
<i>mf</i>	Mud filtrate
<i>M</i>	Fluid injection rate, magnetization, mass, mobility ratio, molecular weight
<i>n</i>	Index, net, number, saturation exponent
<i>N</i>	Nitrogen, noise, number
<i>o</i>	Oil
<i>O₂</i>	Oxygen
<i>p</i>	Cumulative produced, particle, pore, production time
<i>P</i>	Polarization charge, pressure, probability
ΔP	Pressure difference, pressure drop
<i>q</i>	Electrical charge, flow rate,
<i>Q</i>	Flow rate, heat flux, Koeningsberger ratio, quality factor
<i>r</i>	Distance, radial distance, reduced, relative, residual, resistance
<i>R</i>	Gas constant, radius, recovery, reflection coefficient, reservoir, resistivity
<i>s</i>	Skin, solid, solution, specific, surrounding formation, swept region

S	Rate of energy generation, saturation, semblance, sift window, source, surface area
SP	Spontaneous or self potential
SSP	Static SP
t	Bed thickness, decay time, gross, time, true, total
Δt	Transit time
T	Period, temperature, thickness, torque, total thickness, transmissivity
T_1	NMR longitudinal relaxation time
T_2	NMR transverse relaxation time
TOC	Total organic carbon
u	Displacement, flux, flow rate
U	Group velocity, internal energy
v	Specific volume, vaporization, velocity
V	Electrical potential difference (voltage), volume
w	Water, weight fraction, width
wg	Wet gas
ws	Well static conditions
W	Initial water in place, weighting factor, work
xo	Flushed zone
Y	Yield
z	Depth
Z	Atomic number, acoustic impedance, electrical impedance
α	Angle, attenuation coefficient, disassociation factor, pore aspect ratio, SP reduction factor
β	Thermal expansion coefficient
γ	Coefficient of thermal conductivity. γ -ray response, dipmeter pad rotation, gyromagnetic ratio, specific gravity
Γ	Free-air gradient
δ	Displacement ratio, Kronecker delta function, skin depth
Δ	Diffusion effect, dilatation
ε	Hydraulic diffusivity, dielectric permittivity, strain
ζ	Displacement
η	Viscosity
Θ	Acoustic transit time per unit length, induction number
θ	Azimuth angle, incidence/reflection/refraction angle, phase shift, rotation
κ	Dielectric constant (dielectric permittivity, thermal diffusivity)
λ	Decay constant, anisotropy, mean free path, Lamé constant, mobility, wavelength
Λ	Grain size parameter, ratio of pore surface area to volume
μ	Attenuation coefficient, magnetic permeability, shear modulus, viscosity
ν	Ionic mobility, Poisson's ratio
ξ	Logarithmic energy decrement
ρ	Density, radial distance
σ	Capture cross section, mass per unit length, scattering cross section, stress, surface tension
Σ	Macroscopic cross section
τ	Dead time, half-life, time constant, time delay, tortuosity
ϕ	angle, borehole inclination, phase shift, porosity, sonde tilt
Φ	Neutron flux
Φ_{xy}	Crosscorrelation
X	Magnetic susceptibility
ψ	Angle, flux, solution to wave equation
Ψ	Potential
ω	Angular frequency