R_{weq} Determination from E_{SSP}

Clean formations

This chart and nomograph calculate the equivalent formation water resistivity, R_{weq}, from the static spontaneous potential, E_{SSP}, measurement in clean formations.

Enter the nomograph with E_{SSP} in mV, turning through the reservoir temperature in °F or °C to define the R_{mfeq}/R_{weq} ratio. From this value, pass through the R_{mfeq} value to define R_{weq}.

For predominantly NaCl muds, determine R_{mfeq} as follows:

a. If R_{mf} at 75°F (24°C) is greater than 0.1 ohm-m, correct R_{mf} to formation temperature using Chart Gen-9, and use $R_{mfeq} = 0.85\ R_{mf}$.

b. If R_{mf} at 75°F (24°C) is less than 0.1 ohm-m, use Chart SP-2 to derive a value of R_{mfeq} at formation temperature.

Example: SSP = 100 mV at 250°F

R_{mf} = 0.70 ohm-m at 100°F
or 0.33 ohm-m at 250°F

Therefore, $R_{mfeq} = 0.85 \times 0.33$
$= 0.28$ ohm-m at 250°F

$R_{weq} = 0.025$ ohm-m at 250°F

$E_{SSP} = -K_c \log(R_{mfeq}/R_{weq})$

$K_C = 61 + 0.133\ T_{°F}$

$K_C = 65 + 0.24\ T_{°C}$