

Подготовка исходных данных по скважине к интерпретации

Определение температуры пласта

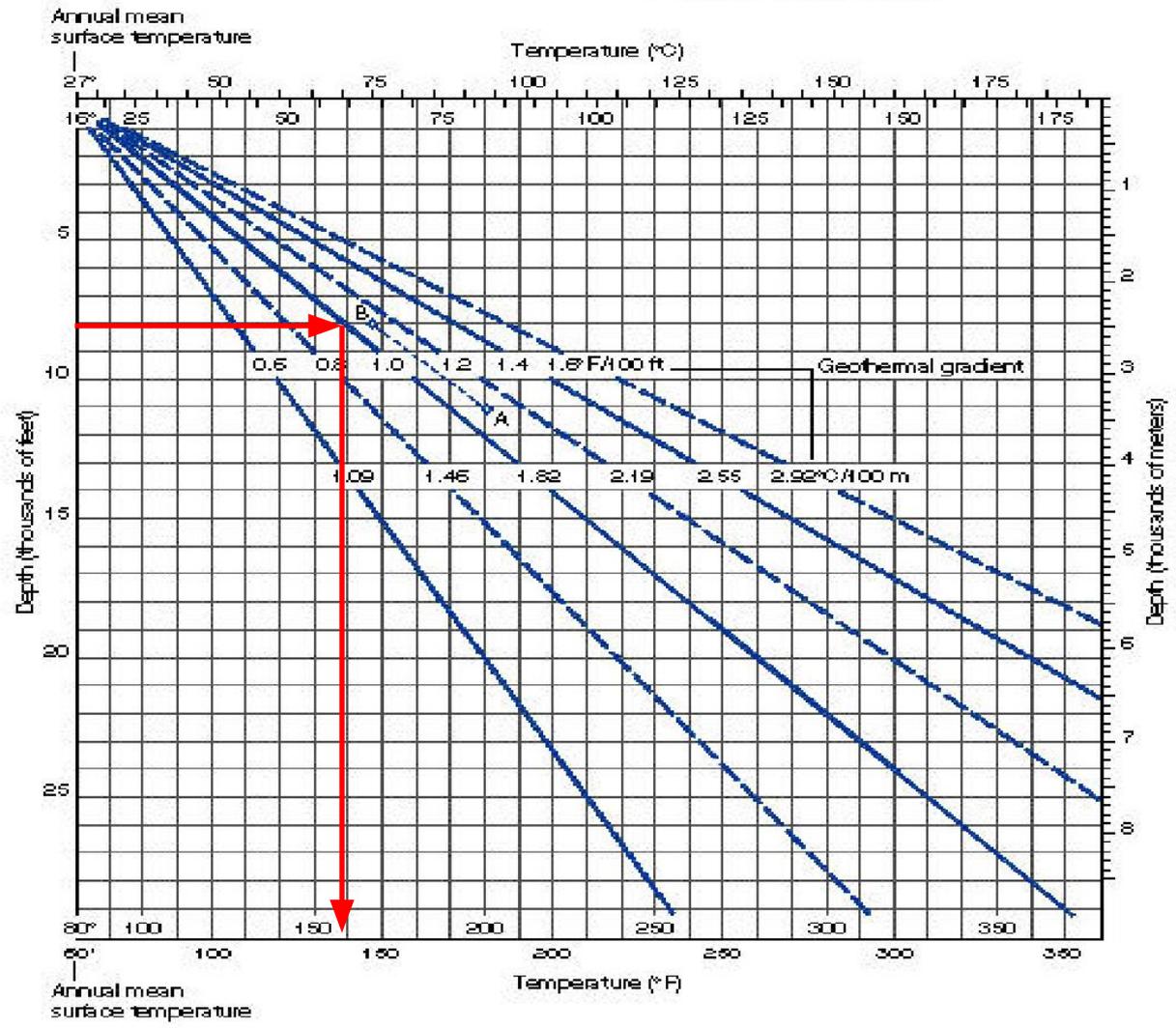
Исходные данные

- **Total Depth Well – 12000 ft,**
- **Bottom Hole Temperature - 200 F,**
- **Mean Surface Temperature - 60 F,**
- **Depth of Formation - 9000 ft,**

- **Depth of Formation - 8000 ft,**
- **Geothermal Gradient - 1.0 F/100 ft,**
- **Mean Surface Temperature - 60 F,**

Depth of Formation - 8000 ft,
 Geothermal Gradient - 1.0 F/100 ft,
 Mean Surface Temperature - 60 F,

Temperature gradient conversions: 1°F/100 ft = 1.823°C/100 m
 1°C/100 m = 0.5486°F/100 ft



Определение электрических параметров бурового раствора

Параметры :

- 1 Плотность ρ_m
- 1 Удельное электрическое сопротивление раствора R_m
- 1 Удельное электрическое сопротивление глин раствора R_{mc}
- 1 Удельное электрическое сопротивление фильтрата R_{mf}

Estimation of R_{mf} and R_{mc}

Gen-7

Direct measurements of filtrate and mudcake samples are preferred. When not available, filtrate resistivity, R_{mf} , and mudcake resistivity, R_{mc} , may be estimated from one of the following methods.

Method 1

Lowe and Dunlap (Reference 36)

For freshwater muds with mud resistivity, R_m , in the range from 0.1 to 2.0 ohm-m at 75°F [24°C], and measured values of R_m and mud density, ρ_m , in pounds per gallon:

$$\log\left(\frac{R_{mf}}{R_m}\right) = 0.396 - 0.0475 \rho_m$$

Method 2

Overton and Lipson (Reference 1)

For drilling muds with mud resistivity, R_m , in the range from 0.1 to 10.0 ohm-m at 75°F [24°C], where K_m is given as a function of mud weight in the table below:

$$R_{mf} = K_m (R_m)^{1.07}$$

$$R_{mc} = 0.69 (R_{mf}) \left(\frac{R_m}{R_{mf}}\right)^{2.65}$$

Example: $R_m = 3.5$ ohm-m at 75°F [24°C]

Mud weight = 12 lbm/gal [1440 kg/m³]

Therefore, $K_m = 0.584$

$R_{mf} = (0.584)(3.5)^{1.07} = 2.23$ ohm-m at 75°F

$R_{mc} = 0.69(2.23)(3.5/2.23)^{2.65} = 5.07$ ohm-m at 75°F

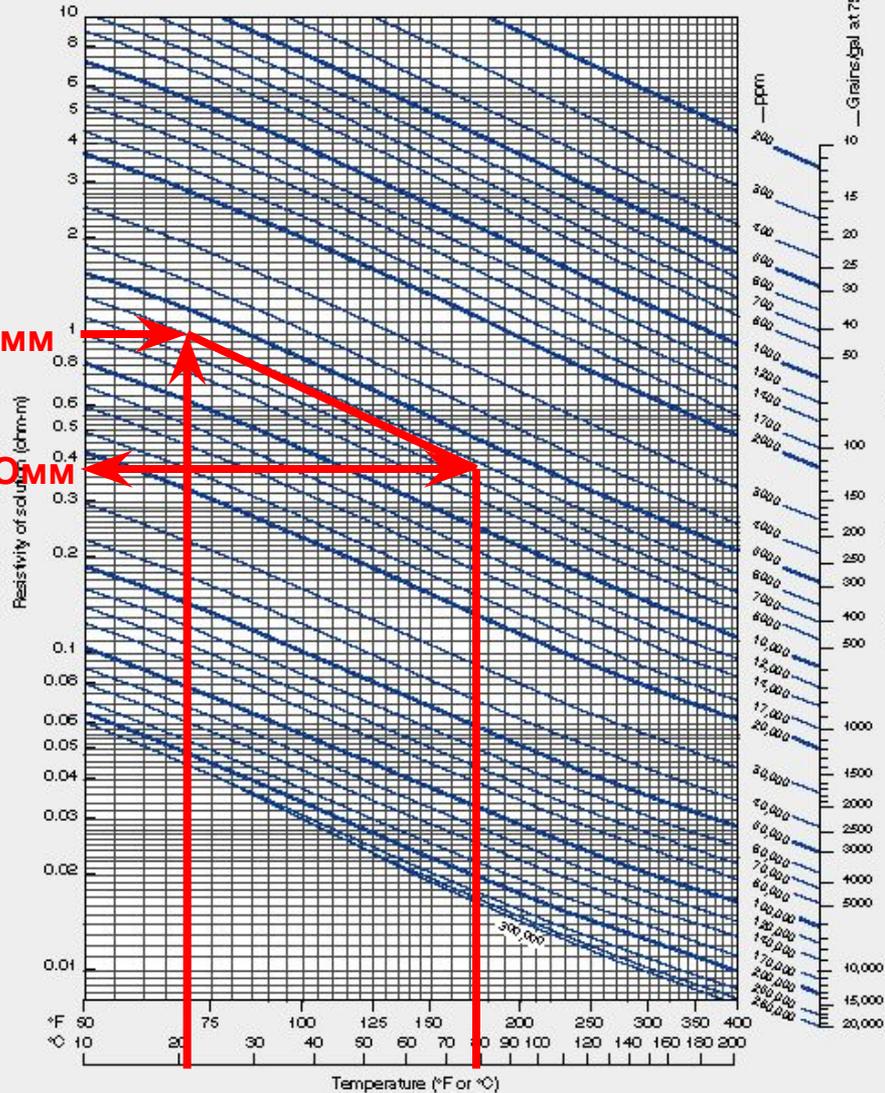
The calculated value of R_{mf} is more reliable than that of R_{mc} .

Mud Weight		K_m
lbm/gal	kg/m ³	
10	1200	0.847
11	1320	0.708
12	1440	0.584
13	1560	0.488
14	1680	0.412
16	1920	0.380
18	2160	0.350

Method 3

A statistical approximation, for predominantly NaCl muds, is $R_{mc} = 1.5 R_m$, and $R_{mf} = 0.75 R_m$.

Conversion approximated by $R_2 = R_1 [(T_1 + 6.77)/(T_2 + 6.77)]^2$ For $R_2 = R_1 [(T_1 + 21.5)/(T_2 + 21.5)]^2$ °C



Rmf=1.0 OMM

Rmf=0.36 OMM

Вычисление Rmf (сопротивление фильтра бурового раствора) при пластовой температуре.

Rmf=1.0 Ом при T=20 C
Rmf=0.36 Ом при T=80 C