

A plot of maximum temperature on regaining circulation after a period of downtime can also closely approximate geothermal trends. After a trip, mud temperature will reach a maximum on bottoms-up. Monitoring these peaks may aid geothermal trend interpretations.

Another method of obtaining geothermal gradient between hole deviation survey runs is the use of Temp Plates. These are self-adhesive sensors containing thermally sealed heat-sensitive elements which change chemical structure at given calibrated temperatures. When exposed to the new rated temperature, the indicator turns from pastel grey to black. The Temp Plates are attached to the survey tool. A record of downhole survey temperatures can therefore be kept. It has been found that this method more closely reflects the true geothermal gradient, although recorded temperature values are lower than true values.

Maximum bottom-hole temperatures recorded during wireline log runs at the same depth can be utilized to estimate the true formation temperature. By use of a modified Horner Plot, a method adapted from Horner's bottom-hole pressure plots (Fertl & Wichmann, 1977), it is possible to estimate true bottom hole temperatures. The method requires maximum recorded bottom hole temperature on each logging run, and information concerning circulating time (t_k = hours) and time since circulation stopped (dt , hours). The recorded data may then be plotted on semilogarithmic paper, with temperature on the linear coordinate and one dimensionless time factor, $\frac{dt}{t_k + dt}$ on the semilog abscissa.