

This note discusses the depth of penetration of seismic refraction surveys and d.c. geoelectrical soundings. Field examples from studies carried out in the vicinity of the Ruhr-Universitaet, Bochum, Federal Republic of Germany are presented to illustrate the variation of a defined depth of penetration for both these methods.

For seismic refraction surveys it was found that the ratio of the depth of penetration to the length of the profile, a certain depth factor varies between 1/2 to 1/10. This illustrates the difficulty of estimating the depth of penetration before conducting seismic refraction surveys and shows the dependence of the depth of penetration, in addition to the length of the seismic profile, on the p-wave velocity of each subsurface layer and the layer's thickness.

Similarly for d.c. geoelectrical soundings, the depth factor, a ratio of depth penetration to the spacing of current electrodes, varies between 1/3 to 1/8. The main factors influencing the depth of penetration are the number of subsurface layers, their specific resistivity and their individual thicknesses, in addition to the spacing of the current electrodes.

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Depth of penetration of geophysical exploration methods as applied  
in shallow engineering geological investigations

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