



METADATA

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Abstract

The book "Seismic Methods: Theory and Techniques in subsurface exploration" introduces the seismic methods developed mainly for the hydrocarbons exploration. Emphasis is given on the presentation of the basic principles of the seismic methods as well as on their applications for mineral resources exploration and geotechnical investigations. The elastic wave propagation theory is presented for plane waves in homogeneous medium. A chapter is devoted to the seismic reflection method and the presentation of relevant case histories. The seismic reflection method is considered as the most developed geophysical technique providing increased resolution images of the subsurface. The geophysical survey includes three main steps, namely data acquisition, processing and interpretation. This book depicts land and marine

seismic reflection data acquisition techniques including equipment description. Seismic data processing involves the application of deconvolution techniques, static and dynamic corrections, velocity analysis, stacking and migration techniques. Apart from velocity analysis based on the seismic reflection data, down hole geophysical well logging techniques for seismic velocity estimation are also presented. A short chapter is devoted to surface wave analysis and its application in geotechnical investigations. The level of the physics and mathematics is kept within the text for undergraduate engineering and geosciences students. Boxes for further reading supplement the text. Elements of signal theory, necessary for the presentation of certain seismic data processing techniques, are given in a separate chapter.

