

Fugro Engineering Services Limited

SEISMIC REFRACTION



This geophysical method is based upon the measurement of travel-times of compression waves travelling through the subsurface. These travel-times (and hence velocities) can be related to the density and elastic properties of the subsurface material.

Compression waves are initiated at a point on the surface, usually using a seismic energy source such as a hammer and plate. The compression waves travel along discontinuities and interfaces between the subsurface layers and are refracted back to the surface. The arrivals of the waves are then recorded by a linear array of sensors, or geophones, which are connected to a computer where the information is recorded. These arrival times are then interpreted to yield a subsurface model in terms of layer thicknesses and velocities. This information may then be related to other soil properties such as rock rippability.



APPLICATIONS

- Determining thickness of overburden
- Profiling of bedrock
- Mapping stratigraphy and geological features (faults, unconformities, mineral deposits etc.)
- Locating buried river channels
- Pipeline route studies
- Determining rock rippability

ADVANTAGES

- Can be used to correlate stratigraphy between boreholes and CPTs.
- Several seismic spreads can be surveyed in one day with minimum disruption to site
- A cost effective tool for pipeline route studies
- Useful in estimating rock rippability

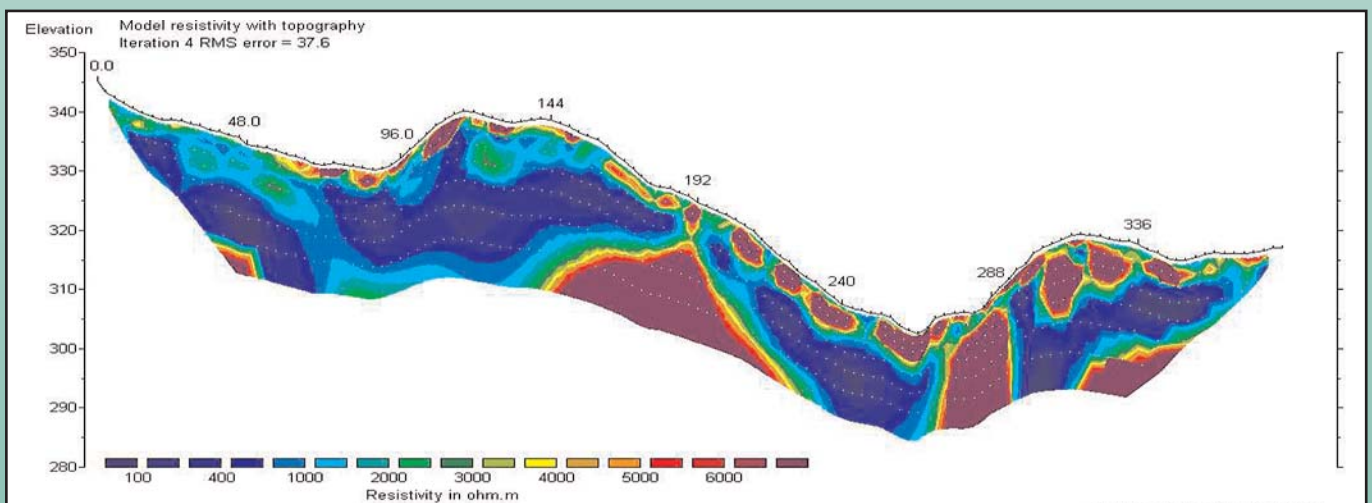
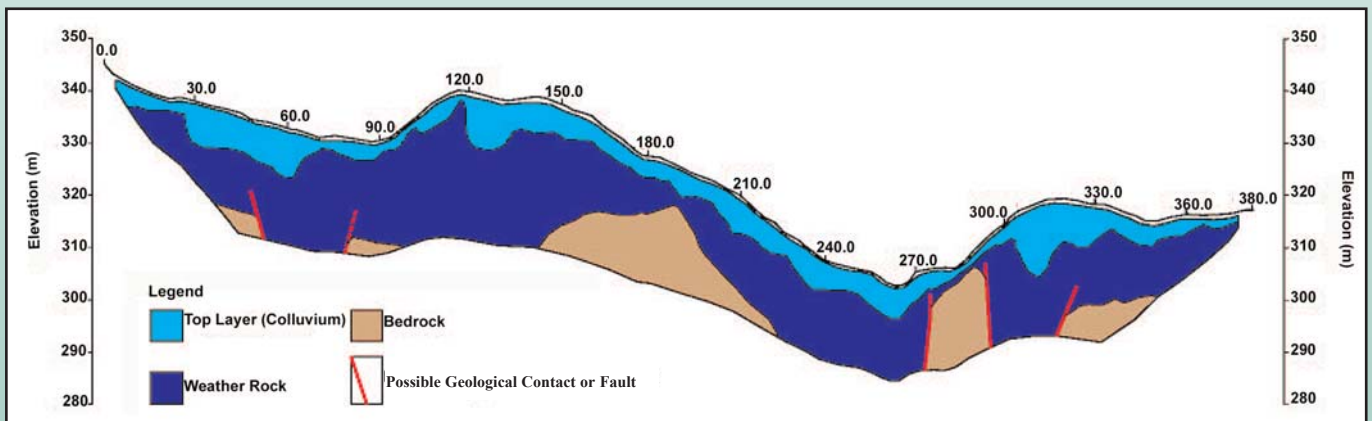
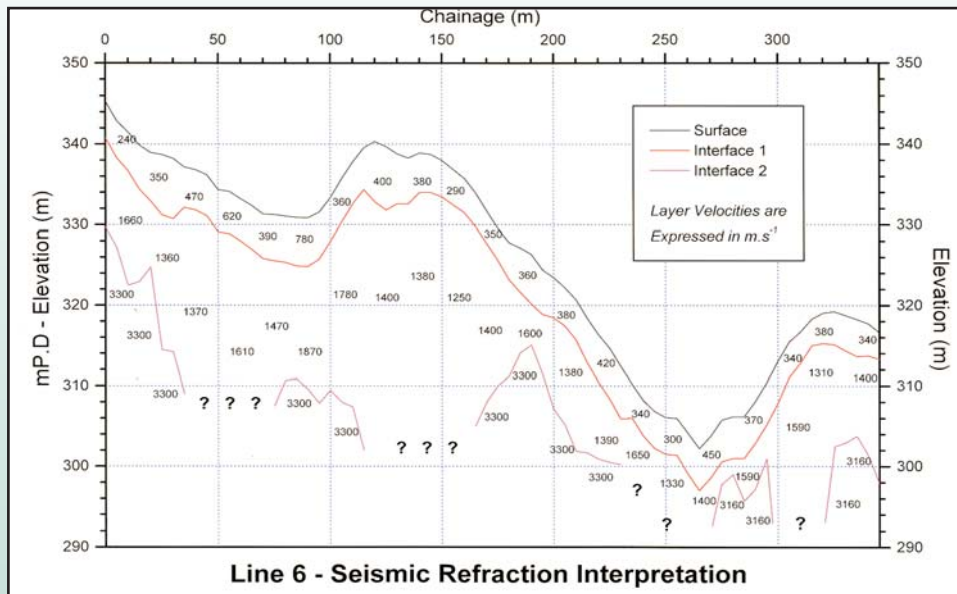
To provide a complete picture of the subsurface, seismic refraction may be used in conjunction with other geophysical techniques to meet specific customer requirements.

OTHER GEOPHYSICAL TECHNIQUES AVAILABLE :

- Electromagnetic Induced Conductivity
- Microgravity
- Resistivity Depth Profiling and Imaging
- Vertical Magnetic Gradient
- Ground Probing Radar
- Cross-hole & Down-hole Seismic
- Borehole Geophysics

The Fugro Group is an international organisation with around seven thousand staff in over fifty countries. Our major disciplines are Geotechnics, Environmental Services and Survey.

The sections below were derived from a survey in a mountainous region near Hong Kong. The Seismic refraction technique was used in conjunction with resistivity imaging to provide a geological model of the subsurface.



Details of services and specifications may change without notice.

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