

# **BUILDING 3-D MODEL OF ROCK QUALITY DESIGNATION ASSISTED BY CO-OPERATIVE INVERSION OF SEISMIC AND BOREHOLE DATA**

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Rock quality designation (RQD) is an important factor for geo-techniques in mining production. RQD is defined by the percentage of total length of core pieces that is greater than ten centimetres in the total length of core run. This factor is influenced by rock properties such as fracture and hardness. In nature, the fracture and hardness of the rock also relate to seismic velocity. Thus we can use the seismic information to build an RQD model if we can define the relationship between RQD and seismic velocity. This model is significant for mining design. In practice, the mining design needs information of the whole mine area, but, the borehole is localised valuable. Meanwhile, the surface seismic method can provide information of the whole survey areas, but the resolution is smaller than the borehole data. The seismic and borehole data may provide very useful information for geo-techniques if we can exploit seismic data as a mean of interpolating the borehole data to the whole model of geo-techniques factor like RQD. In this work, we analyse borehole data to establish the relationship between RQD and seismic P-wave velocity. This relationship is used to convert 3D seismic model that obtained by co-operative inversion of seismic and borehole data into a 3D model of RQD.