Assessment of seismic hazard in mines

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Abstract The assessment of seismic hazard in mines has several peculiarities compared to the similar assessment for tectonic earthquakes: (a) in mines seismicity is typically induced by the extraction of rocks, what makes the assessment of hazard depends on the planned mining sequence, (b) many seismic events in mines have source mechanisms different from the mechanisms of tectonic earthquakes, (c) the likelihoods of both strong ground motion from distant seismic events and localized sudden inelastic deformation on the contour of excavations are of interest, (d) the spatial distribution of seismic hazard may experience significant change over relatively short periods of time (several years), which makes it possible to implement rigorous testing of the hazard forecasts, selection of optimal forecast method and its calibration. This paper provides a brief review of recent publications on the assessment of seismic hazard in mines. The method of intermediate- and long-term hazard forecast based on the combination of observed seismicity and seismicity modeled for the planned mining sequence is discussed in detail. The application of this method at the acting underground mine in Australia is presented.

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